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Northeastern University/Undergraduate Catalog

1973-1974

Volume 1



NORTHEASTERN UNIVERSITY BULLETIN

October Issue



1973
1974

BASIC CATALOG

The Northeastern University Bulletin is issued at Boston, Massachusetts, six times a year: once in February, once in August, once in October, twice in November, and once in December. Application to mail at second class postage rates pending at Boston, Mass. Vol. 1, NO. 2, October 10, 1973.



NEW ENGLAND
ASSOCIATION
OF SCHOOLS
AND COLLEGES
ACCREDITED MEMBERS

- The New England Association of Schools and Colleges accredits schools and colleges in the six New England states. Membership in one of the six regional accrediting associations in the United States indicates that the school or college has been carefully evaluated and found to meet standards agreed upon by qualified educators. Colleges support the efforts of public school and community officials to have their secondary schools meet the standards of membership.

NORTHEASTERN UNIVERSITY BULLETIN

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36 vols
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1973
1974

BASIC CATALOG

Boston-Bouvé College
College of Business Administration
College of Criminal Justice
College of Education
College of Engineering
College of Liberal Arts
Lincoln College
College of Nursing
College of Pharmacy and
Allied Health Professions



A Message from the President

RELEVANCY. INVOLVEMENT. MOTIVATION.

These words will come to life for you as a Northeastern University student. Because Northeastern is located in Boston and all of its undergraduate programs operate on the Cooperative Plan of Education, you will have unlimited opportunities to relate what you learn in the classroom to the world outside the campus, and to share your experiences—your Adventures in Education—with your fellow students and professors.

Under the Co-op Plan you will alternate periods of classroom study with periods of paid employment in positions related as closely as possible to your academic major.

To explain briefly the challenging opportunities which the Co-op Plan presents to you is a difficult task. As one student said:

"You almost have to live it to appreciate it."

Through the combination of work and study, you will not only widen your own horizons but you may become involved in activities of benefit to others. You might find yourself working as a team member on a problem in environmental engineering, performing an experiment before an enthusiastic group of children at the Boston Museum of Science, tutoring Spanish-speaking residents in English, or teaching physically handicapped children to swim.

You will find that the Co-op Plan offers you two built-in features which will be of great benefit to you. In addition to earning a substantial portion of your college expenses, you will have a maximum of two years of on-the-job experience to offer a potential employer upon graduation. You will thus oftentimes be able to command a higher starting salary in your first job than a graduate from a traditional institution.

Approximately 3,500 freshmen arrive on campus each fall. About half of the class is resident students. The Freshman Class is usually composed of two-thirds male and one-third female, and is representative of 30 states and 40 foreign countries.

If you are one of many students today who is concerned about the many social problems of our times, you will find it a distinct advantage to attend a university which is truly part of the world around it—a university which is widely recognized as a world leader in cooperative education and a model for the nation.

I cordially welcome you to Northeastern University where the faculty and the man teach each other.

ASA S. KNOWLES

384782

Equal Opportunity Policy

Northeastern University is committed to a policy of providing equal opportunity for all. In all matters involving admission, registration, and all official relationships with students, including evaluation of academic performance, the University insists on a policy of nondiscrimination. Northeastern University is also an equal opportunity employer; it is institutional policy that there shall not be any discrimination against any employee or applicant for employment because of race, color, religion, sex, age or national origin. In addition, Northeastern takes affirmative action in the recruitment of students and employees.



We hope that you will enjoy reading this catalog. This publication has been designed to help you in your educational and career planning, and to provide the kind of information you will need as an applicant for admission.

Quite naturally, we are enthusiastic about what Northeastern can offer you: an attractive combination of an exciting urban location, fully accredited programs of study in the Undergraduate Colleges, and unique learning experiences provided by the Cooperative Plan of Education. Northeastern University is now recognized as the international center for cooperative education. Through the Cooperative Plan, now being adopted by increasing numbers of colleges and universities, you will profit from challenging employment in a wide variety of fields of work.

We encourage early application for admission, and we hope that we can be of service to you as you make plans to continue your education.

**The Committee on Admissions
Department of Admissions
Northeastern University
360 Huntington Avenue
Boston, Massachusetts 02115
Tel. (617) 437-2200**

Tuition and Regulations

Tuition rates, all fees, rules and regulations, courses and course content are subject to revision by the President and Board of Trustees at any time.



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PART I



ABOUT NORTHEASTERN

ABOUT NORTHEASTERN

The Philosophy of Education

Northeastern has never forgotten its original purpose: to offer an education to all qualified students who possess both the desire for additional knowledge and the determination to acquire it in spite of possible hardships.

The University's long experience in offering a realistic type of education that provides an opportunity for productive work as a part of the total educational experience is particularly significant today, since Northeastern is fully aware of the importance of bringing its full resources to bear in helping to solve monumental—and universal—social problems. Northeastern has also made it possible for many members of minority groups to obtain an education.

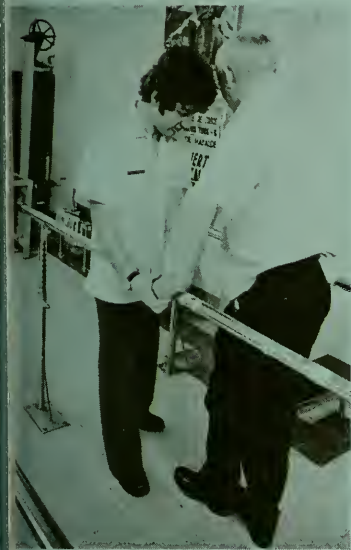
Northeastern's location in Boston and the fact that it is the largest Cooperative Plan university in the world are significant factors which provide opportunities for student involvement in areas of national concern. For example, you as an undergraduate can have cooperative work assignments in such areas as air pollution research, rehabilitation, medical research, social service, environmental studies, and law enforcement. Student activities, too, offer a chance to "be where the action is": namely, in a wide variety of community-action programs, many of which help handicapped people, ghetto residents, and minority groups.

Today's socially conscious and alert students often wish to continue their education on the graduate level. In response to this desire, Northeastern has extended its Cooperative Plan to some areas of graduate education. One example is the School of Law, which stresses a curriculum substantially shaped around the significant social issues of contemporary society.

Many prominent educators, including those who are graduates of traditional, non-Cooperative Plan schools, are now urging that all college students have opportunities for on-the-job experience before graduation. These educators realize that the practical experience thus gained can complement college curricula.

Thus by alternating between classroom instruction and cooperative assignments, you, as a Northeastern student, are in a much better position to examine, to doubt, and to explore than your counterpart at other educational institutions. You have the opportunity to test the opinions you have formed. You see society not for what it is, but for what it can be.

This is the challenging opportunity which Northeastern provides. It is the challenge of the Age of Social Conscience which is being met effectively by its students and graduates.



Boston & Northeastern

Northeastern University offers you more than the traditional education college students can expect.

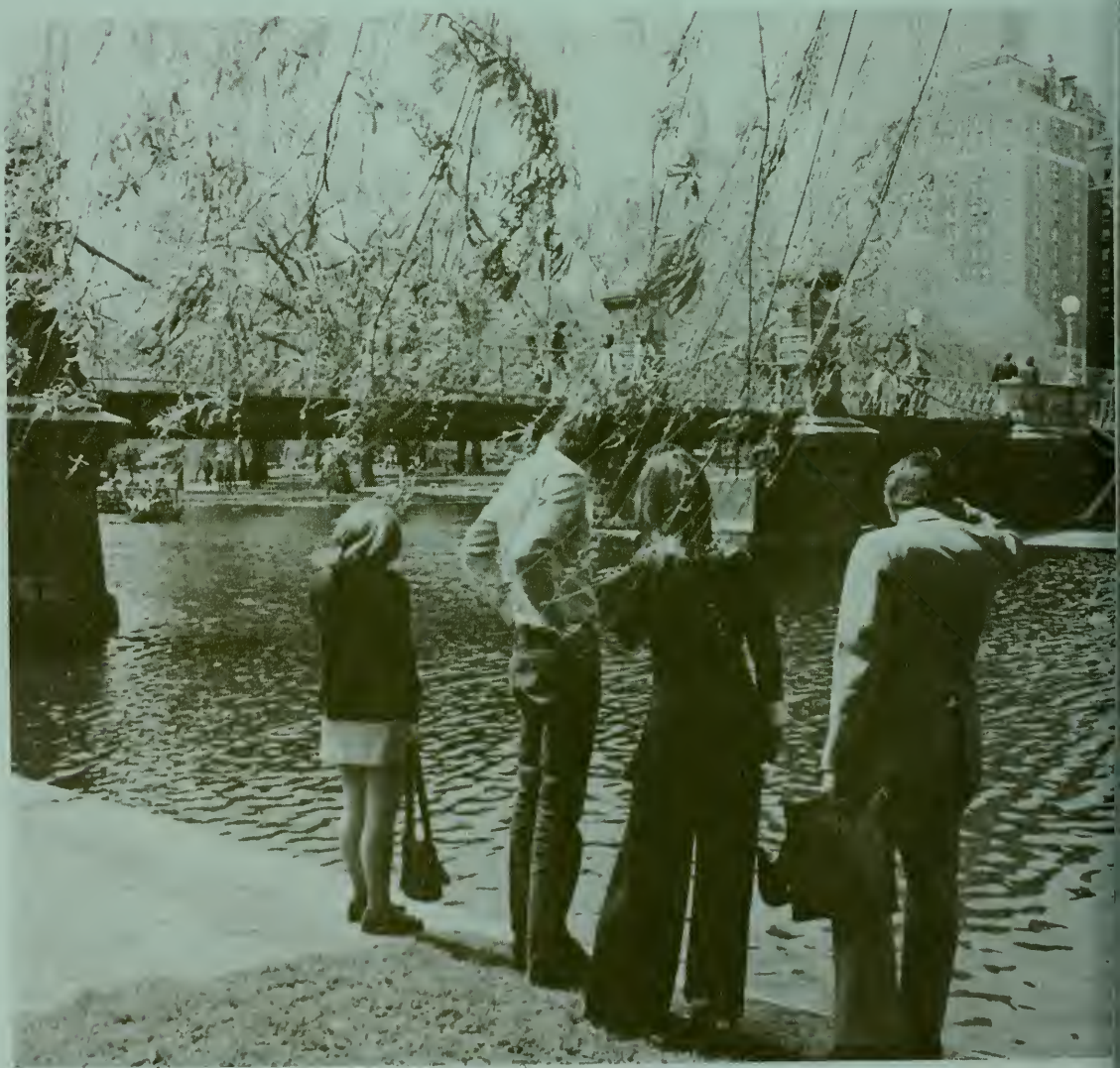
The University is composed of people from every intellectual, political, economic, racial, ethnic, and religious background. Naturally its location attracts such a diversified student body and excellent faculty.

Boston is where young people are; newspapers, magazines, and the media have spread the word. It is a thriving metropolis, a mixture of Old World tradition and modern urban America. It is a city where youth explore its varied and rich history; it is a city where youth contribute so much to the social consciousness of the problems of the modern city. It is the perfect college town, where the past is appreciated, the present enjoyed, and the future anticipated.

Northeastern students, through the Co-op Plan, live in the city, work in the city, contribute to the city: they are teacher aides in ghetto schools; business administration interns in law offices, accounting firms and other exciting areas; nursing trainees in some of the most famous hospitals in the world; engineering co-ops in outstanding corporations. As a matter of fact, students in all of Northeastern's Colleges can be found working in the city.







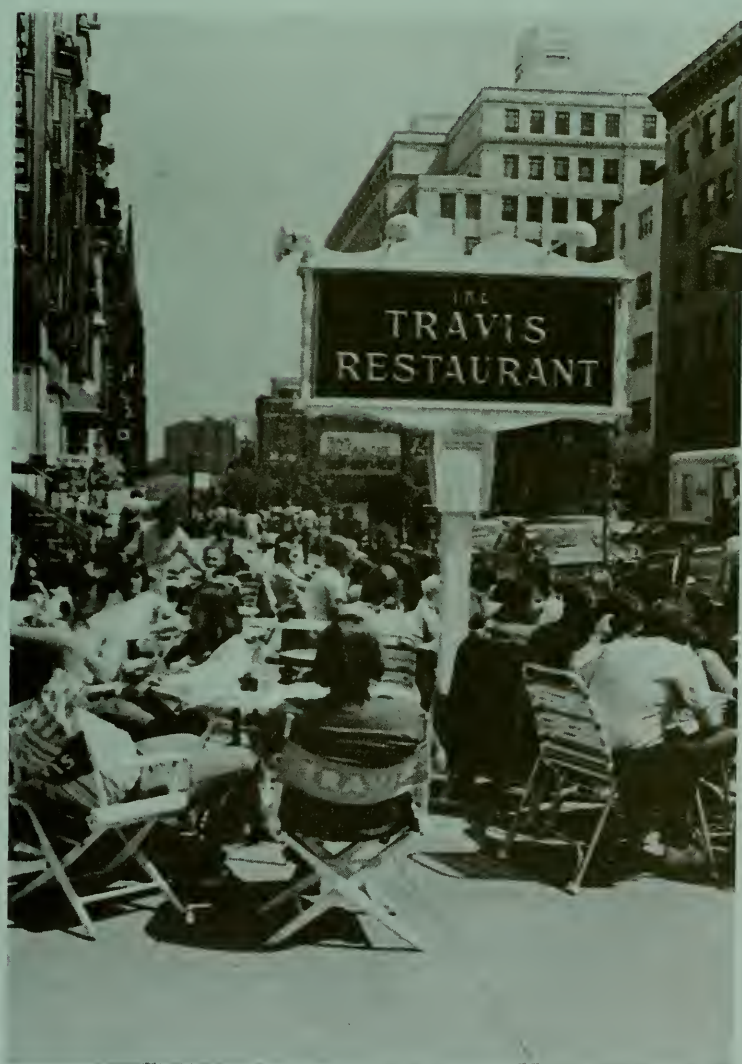


And the City—what of the City? Boston—where you can follow the well-worn cobblestones and bricks from Paul Revere's home to Bunker Hill, to Faneuil Hall, to Boston Common and Beacon Hill; the place to browse in numerous book shops, libraries, and art galleries along Newbury Street; the place to shop for food in the outdoor markets in the North End; the place to buy jeans for sailing along the Charles River or designer originals for an opening night, whether it be at Symphony Hall, or the new Boston Center for the Arts, home of the Boston Ballet and Opera Company; the place to sample Spanish, Chinese, Greek, German, Italian, and French food and make the round of English pubs (and, Boston is of course known for its excellent seafood); the place to view the varied architecture of the past (State House, Back Bay, Beacon Hill), and of **now** (Government Center, Copley Square Plaza, the Prudential Center, the Christian Science Church Complex).



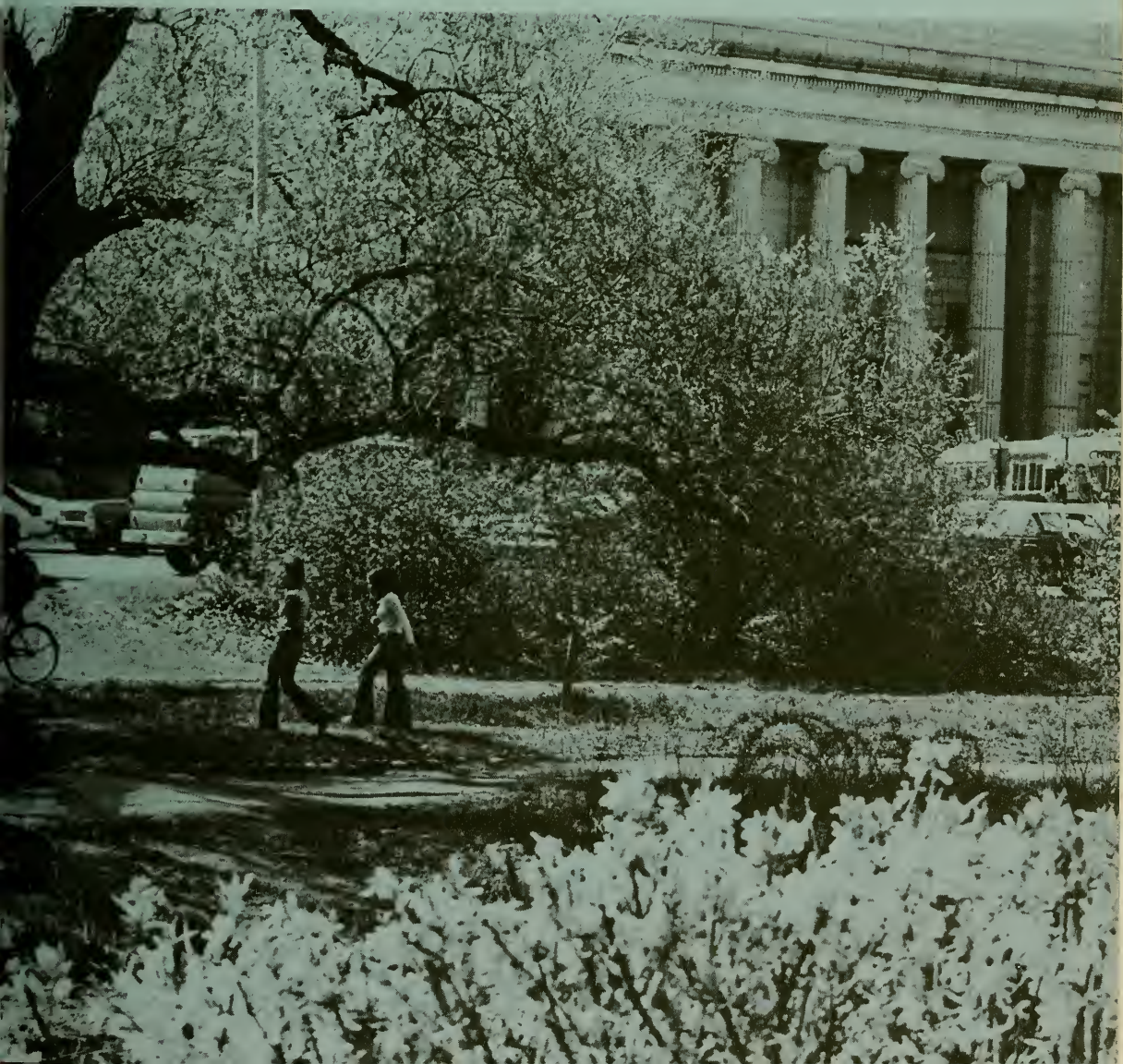


Boston is the city of colleges. Within walking distance of Northeastern can be found Boston University, Simmons College, Emmanuel College, and MIT, to name but a few. Also within walking distance of the University are the Museum of Fine Arts, Symphony Hall, the Gardner Museum, the New England Conservatory of Music, Jordan Hall, Horticultural Hall, and the Boston Public Library.



Upon boarding a bus or the subway, students can easily travel to the theatre district, where pre-Broadway plays "tryout" and innovative young artists stage and produce their own contemporary hits.









For sports enthusiasts, Boston offers professional sports of all types. The Boston Bruins, the New England Whalers, the Celtics—all play at the Boston Garden; the Red Sox play their home games within a mile of the Northeastern campus; and, there are always the exciting crew races on the Charles. Not too far from Boston is Foxboro, the home of the New England Patriots. And, in nearby New Hampshire, Maine, and Vermont can be found some of the best skiing in the country.

Boston is where Northeastern is; and Northeastern is Boston.



Buildings and Facilities

The main campus of Northeastern University is located on Huntington Avenue in the Back Bay section of Boston, near the Fenway.

Northeastern University's 48-acre campus is divided by Huntington Avenue, with the educational buildings on the south side and dormitories on the north.

The main educational buildings, all of which have been completed since 1938, are of glazed-brick construction in the contemporary classic style. Most are interconnected by closed passageways so that students and faculty may move from building to building under shelter during the winter months.

In Richards Hall are located some of the main administrative offices of the University, offices and laboratories of the Biology Department, and Mechanical Engineering laboratories.

The Sarkis and Vosgitel Mugar Life Sciences Building contains the College of Pharmacy and Allied Health Professions and the Departments of Biology and Chemical Engineering.

Centrally located where it is readily accessible to all students is the Dodge Library, operated on an open-stack plan and equipped to serve effectively the needs of the varied student bodies which comprise the Northeastern community. The Dodge Library is an official depository for government publications and documents.

The Carl S. Ell Student Center provides facilities for student recreation and for curricular activities. The Alumni Auditorium, with a seating capacity of 1,300, is part of this building. Also included are special drama facilities, a ballroom, a main lounge, fine arts areas, student offices, conference rooms, meeting areas, and a student dining area seating more than 1,000 persons.

Hayden Hall provides the principal facilities of the Colleges of Liberal Arts, Engineering, and Business Administration. Offices of all the graduate and professional schools except Education are located here, together with those of the University Registrar and other administrators.

Churchill Hall contains the administrative offices of University and Lincoln Colleges and physics laboratories. On the ground floor is the faculty and staff cafeteria.

The Godfrey Lowell Cabot Physical Education Center is one of the best equipped in New England. It contains four basketball courts, an athletic cage, and a rifle range, as well as administrative offices for the Department of Athletics and for the Physical Education Department of Boston-Bouv  College.

Mary Gass Robinson Hall contains the offices of the College of Nursing, Physical Therapy, and the Division of Health Professions of the College of Pharmacy and Allied Health Professions; nursing, biology, and physical therapy laboratories; radio and TV facilities; lecture rooms; and classrooms.





The United Building is the location of the offices of the Departments of Mathematics, Economics, Journalism, Psychology, Sociology, and Industrial Engineering and research facilities for Biology, Psychology, and Mechanical Engineering.

The Charles A. Dana Research Center houses research facilities for Physics and Electrical Engineering.

Three other buildings on the campus have been completely remodeled and reconditioned for educational purposes. These are the Botolph Building, which houses the Department of Civil Engineering; the Forsyth Building, in which are located the University Health Services, the planetarium and some of the Mechanical Engineering laboratories; and the Greenleaf Building, housing the Earth Sciences and Military Science Departments and research facilities.

The Charles and Estelle Dockser Hall, a five-story structure, houses Boston-Bouvé administrative offices, classrooms, laboratories, and faculty offices, as well as a library, dance studio, gymnasium, and recreation center.

The Barletta Natatorium, an addition to the Cabot Center, contains a 105-foot swimming pool for instruction and intercollegiate competition, a practice tank for the rowing team, a weight room, handball courts, and shower and dressing facilities.

The Edward L. Hurtig Hall, devoted entirely to chemistry, contains classrooms and laboratories for undergraduates as well as special research facilities for graduate students and faculty. It also houses the departmental library as well as lecture halls and offices.





The Asa S. Knowles Center, completed in 1969, is the University's newest building. It is the headquarters of the School of Law and the College of Criminal Justice. The Departments of Graphics, Philosophy, and Political Science have their offices here.

Ethel G. and Reuben B. Gryzmish Hall, the section of the Knowles Center in which the School of Law is housed, was opened in 1970. Gryzmish Hall is a building especially designed for the School's distinctive program of legal education. It contains a law library, student lounge, moot courtroom, jury room, judge's chambers, classrooms, and offices.

John A. Volpe Hall, the second section of the Knowles Center, is the headquarters of the College of Criminal Justice. Volpe Hall was dedicated in the spring of 1972.

A Student's Voice



As an average high school student with little financial support, I desired a school where I could obtain a good business education. Northeastern University, with its cooperative education program, provided the best means to the achievement of my goal.

My relationship with Northeastern began quietly. During my freshman year I applied myself to my studies and became acclimated to the atmosphere of University life. Most of my time outside of school was spent holding a part-time job with McDonald's. The money earned, along with financial aid received from Northeastern, enabled me to support myself and pay for my education during that year.

I was concerned with expanding my work at McDonald's into a full-time co-op experience; with the help of my coordinator I was able to accomplish this. What I learned there were those principles which cannot be taught in a classroom; only through actual full-time working experience can an individual achieve growth in his ability to interact with others. The value of the cooperative concept was thus demonstrated to me.

By my third year at Northeastern, I had developed meaningful relationships with school friends and faculty members. I began to desire a greater degree of involvement with the school itself. The Student Advisory Committee served as a means of achieving this goal. SAC, a formal line of communication between students and faculty of the College of Business Administration, sponsors teacher and course evaluations, book drives and other activities.

I also began to take more advantage of campus social life at Northeastern. Of special interest to me were the Moon in Virgo Coffee House, the Sunday night movies, and international trips at low cost sponsored by the Husky Key (this year the trip was to Spain). As a Northeastern student, I have always had a wide variety of activities from which to choose.

Looking back from this, my senior year, my initial expectations of cooperative education seem years away in light of what I have realized from this process. Through the co-op experience, one perceives a realistic picture of the outside world as well as greater self-awareness. At Northeastern, this combination of academic, social, and work experience can enable any self-motivated individual to become the type of person he wants to be. As a prospective Northeastern graduate, I feel that the time I spent here was invaluable in giving me direction and the proper perspective of the world that awaits me.

JOHN DE LUCCA

The Faculty— Scholars, Innovators, Advisers

Our faculty members, representative of almost every state in the nation and numerous foreign countries, are chosen for their enthusiasm for teaching, for their ability to stimulate intellectual and scientific curiosity, and for their genuine understanding of young people.

Northeastern faculty re-examine and re-evaluate curriculum constantly in order to keep pace with the changing needs of students. As a result of this practice, many opportunities are available here which are available at few other institutions.

As a student in the College of Liberal Arts you can plan your own program as part of a new "Independent Major," thereby receiving training not provided by conventional concentrations. There is also a new Department of Afro-American Studies within the College.

The College of Engineering offers a new program in General Engineering, which enables you to plan your curriculum around your own goals and interests, complementing your engineering courses with others from among the physical, life, or social sciences. There is an Engineering program designed for every qualified transfer student. Graduates with an Associate Degree in Engineering Technology are eligible for an accelerated three-year program. Other associate degree holders are given individual attention and placed in the best position in the engineering curriculum.

The College of Business Administration allows you to design your own concentration in consultation with a faculty adviser. The school also has a Student Personnel Office with an open-door policy to help students who require academic counseling, and a Student Advisory Committee which represents the interests and viewpoints of students, and prepares student/teacher/course evaluations.

The College of Education has a Teacher Aid program which gives selected students an opportunity to participate as employees of school departments in instructional or administrative positions. With an extremely tight job market in this area, this extra involvement can be of great help to those of you who can offer experience beyond a minimum period of student teaching.

Representatives from the Colleges of Education, Criminal Justice, and Liberal Arts are proposing a new undergraduate major in human services. If the major is approved, students from these Colleges who meet the pre-requisite requirements may pursue courses and field experiences during the junior and senior years that will prepare them for a wide variety of positions in the human services areas: rehabilitation counselor trainee, psychological assistant, youth worker, social case worker.

Northeastern's College of Nursing programs were the first in the country to be offered on a "co-op" basis. Through affiliation



with 21 hospitals in the Greater Boston area, you are provided with a variety of clinical experience settings. The College strives to meet your needs by encouraging student representation on the majority of its standing committees.

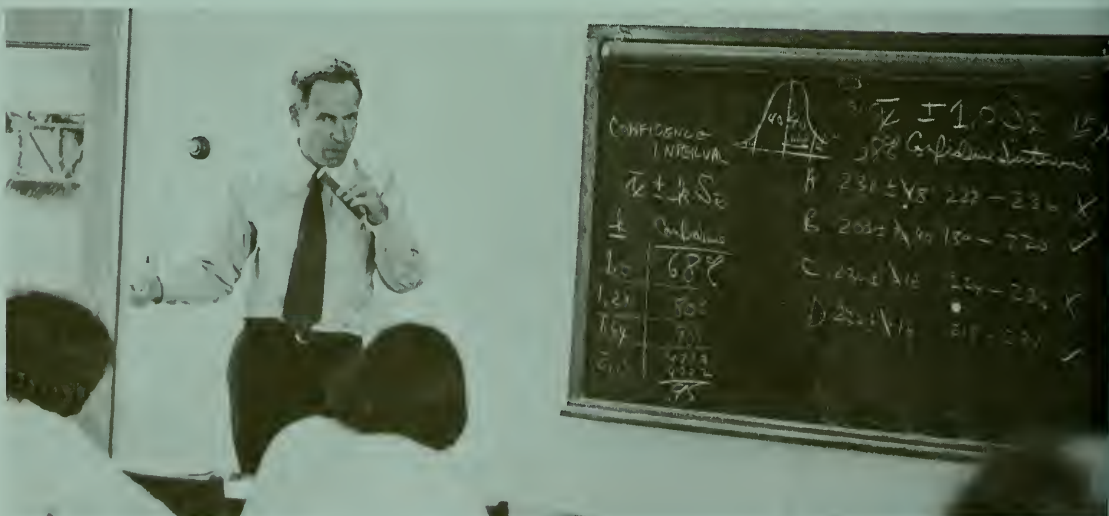
There is a two-year program in the College of Nursing which is especially designed for licensed practical nurses who want to receive the Associate in Science degree and become eligible to take the State Board Examination.

As a Physical Education student you may specialize at the elementary or secondary level, or graduate as a generalist. Also you may now elect concentrations in dance, health education, recreation science, coaching, athletic training, or other possibilities as second teaching areas. Many school systems are now adding drug education and sex education courses, and Northeastern's Health Education major can prepare you for these varied teaching experiences.

When you are a senior Pharmacy student, you may elect an independent research course, under the direction of a faculty member, which allows you to explore and acquire an in-depth knowledge of any area which interests you. The program also includes the possibility of taking courses from other schools within the University.

Lincoln College's Bachelor of Engineering Technology program is distinctly different from typical engineering programs. It prepares you for the unique pivotal position on the professional-technologist-craftsman team. More than 100,000 technologists will be needed each year (schools now graduate only 25,000 per year) to work with engineers, scientists, doctors, supervisors, and artisans.

The Cooperative Plan and an emphasis upon applied rather than theoretical courses contribute to the dynamic flavor of the College of Criminal Justice. Graduates have found careers in law enforcement, industrial and retail security, criminalistics, corrections, rehabilitation, and social services. Because of the academic nature of the program, many students have also undertaken graduate study in social work, criminology, law, and public affairs.





Those of you in the Division of Allied Health Professions are prepared, through classroom study and authentic clinical experience during co-op, to assume a professional role in one of today's health fields. The programs in Medical Laboratory Science, including medical technology and cyto-technology, prepare you to assume laboratory duties at several levels in either co-op positions or part-time jobs while completing your baccalaureate degree program. Upon graduation you are eligible for national registration examinations and also for graduate study. If you complete the Associate in Science degree in Respiratory Therapy you may pursue a related baccalaureate degree program without loss of credit.

It has been said that "the most essential thing in the work of education is that sympathetic touch of life on life. It is by that fine process that personality is developed, matured, and enriched in all the younger candidates for human existence."

One reason for the success of the Cooperative Plan at Northeastern University is the "touch of life on life" which is made possible by the close association between more than 700 scholars on the faculty of the Basic Colleges and their students. When you enter Northeastern, you are assigned an academic adviser who works with you during your freshman year on a wide variety of problems concerning your personal and academic development. You are also afforded the opportunity for academic counseling throughout your upper-class years.



Research

One of the fundamental purposes of a university is to discover new frontiers of human knowledge through basic research. This is of great importance in a university like Northeastern, which emphasizes preparation for graduate study.

Research projects totaling approximately \$5,000,000 yearly are being performed in virtually all departments of all the Colleges, with support coming from the University, the Office of Education, the National Institutes of Health, the National Science Foundation, and many other government agencies and private industry. Nearly all programs employ students, either as cooperative students or as graduate fellows.

A list of some of these projects, to show their diversity, would include fundamental studies in nuclear physics, mathematics, labor economics, solid-state theory, microelectronics, the effect of plasma on re-entry communications, cancer, biological applications of lasers, modification of visual threshold under hypnosis, and mathematical models describing metal alloys.

This research program helps Northeastern University to attract and retain the services of distinguished faculty members. You will be proud to know these men and women as professors in your classrooms.



The Cooperative Plan

The Cooperative Plan provides you with an interrelated experiential and study program by scheduling an alternating pattern between classwork and relevant experiences. This pattern of following classwork theory with a period of realistic application can enhance your total educational development. Upon graduation you will not only have a degree, but also a substantial amount of experience to offer a potential full-time employer. In addition, the money you earn on cooperative assignments will help to defray the cost of your tuition, books, and incidentals.

You will be assigned to a faculty coordinator who will be responsible for all phases of your cooperative program and will assist you in gaining maximum value from your education at Northeastern. Personal interviews, in which your academic progress and evaluations of your previous work experiences are reviewed, provide the basis for referral to specific opportunities that would help you realize your career objectives. Your coordinator is a specialist who keeps abreast of activities in his area of responsibility so that he can provide effective counseling on opportunities and trends in these areas. In general, starting assignments tend to be of a more routine nature, to be followed by increasingly professional applications as your education and abilities increase. Subject to economic conditions and your willingness to consider alternative opportunities, you can expect to work on responsible and challenging assignments during participation in the program.

At some point in your program you may wish to participate in an activity other than paid employment during a cooperative period. You may wish to travel abroad, spending time in one or several foreign countries learning about the customs, the culture, and the people. You may wish to volunteer your services to your local hospital, or spend some time on an Indian reservation in the Southwest. Or you may wish to take specialized courses at another institution. Time to engage in these and similar activities can be arranged with your coordinator as a part of your cooperative education program.

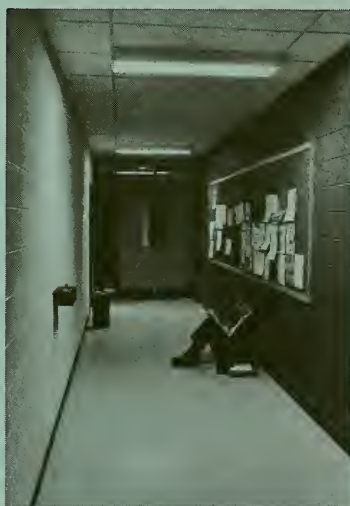
All cooperative curricula leading to the baccalaureate degree are five years in length. Most programs consist of a freshman year of three consecutive quarters of full-time study followed by four upper-class years in which you will alternate periods of classroom attendance at Northeastern with periods on cooperative assignment. Programs in Education and in Pharmacy vary slightly from this pattern in order to meet professional requirements in their particular fields.

Associate degree programs in the College of Nursing and in Allied Health Professions require three years to complete, with two upper-class years "on co-op."

Students attending the College of Liberal Arts may elect to attend Northeastern on a "full-time" program, in which eight quarters of upper-class study may be completed in three years. Most students exercising this option are headed for graduate

school and are anxious to save a year toward this goal, however, the majority of Liberal Arts students at Northeastern attend under the Cooperative Plan.

Further details on the cooperative program are available in a booklet entitled "The Co-op Plan" which the Department of Admissions will be happy to send you on request.



Alumni Association

Over 56,000 alumni of Northeastern are united under an all-University Alumni Association which has as its prime purposes the promotion of the welfare of Northeastern University, the establishment of a mutually beneficial relationship between the University and its alumni, and the perpetuation of fellowship among members of the Association.

The Association headquarters and Alumni Lounge are located in Room 101 Eli Building. The official records and addresses of alumni are maintained in Room 260 of the United Realty Building.

The official publication of the Alumni Association, *NU Today*, published monthly except August, is sent to all alumni on record.

Activities of the Association, including the Alumni Day celebration and the annual presentation of Professional Promise awards to outstanding seniors in each of the Colleges, are directed by the Association's Vice President of Alumni Affairs. Alumni officers also attend meetings of the undergraduate classes to form a closer relationship between the Association and its future members.

The Alumni Relations Office assists the various class officers in planning class reunions. Each class normally holds a reunion every five years during the month of June. The Vice President for the Alumni Class Council is responsible for coordinating class activities and organizing class functions.

The Vice President for Alumni Clubs works in close association with officers of the more than 25 Regional Alumni Clubs which have been established from coast to coast. All alumni are eligible to become members of these organizations. The Alumni Clubs meet periodically, often in conjunction with visits from members of the faculty or with athletic events.

For Boston area alumni, monthly luncheon meetings are held September through June in the downtown section of the city. A suburban luncheon club meets quarterly in the area of Route 128. The Manhattan Luncheon Club also meets quarterly.

The Association also sponsors and assists the various constituent organizations such as Varsity Club, Law, Pharmacy, Boston-Bouvé, and other special groups, all of which have their own officers and conduct various programs throughout the year. In cooperation with the Varsity Club, the Association presents trophies to the outstanding athlete of the year in each of the six major sports.

The Alumni Association provides a unique and valuable service both to the University and to the community by sponsoring admissions conferences for high school students and for the parents of those students who are interested in attending college. Local residents as well as alumni of the University are invited to these conferences, which help to clarify many of the questions today's parents and young people have concerning the admissions procedures to our colleges and universities.

PART II



ACADEMIC PROGRAMS

ACADEMIC PROGRAMS

Quarter Hour Credits

Northeastern University operates on a quarter system calendar. All courses are evaluated in terms of quarter hour credit. A quarter hour credit is equal to three-fourths of a semester hour credit.

Classes at Northeastern University are scheduled in different modules.

In assessing quarter hour weights for courses, the following statement applies.

One quarter hour of credit is equal to 50 minutes of instruction per week, plus two hours of preparation.

Tuition and Regulations

Tuition rates, all fees, rules and regulations, courses and course contents are subject to revision by the President and Board of Trustees at any time.

Boston-Bouvé College

Catherine L. Allen, Ed.D., Ph.D. *Dean, Director of Graduate School*

In July 1964, Bouvé-Boston School merged with Northeastern University after a half century of excellence as a woman's institution specializing in physical education and physical therapy. From the very beginning in 1913, there were emphases on health education, recreation, winter sports, and camping.

Today, Boston-Bouvé College of Northeastern University is coeducational with four undergraduate departments — Health Education, Physical Education, Physical Therapy and Recreation Education. There are also two degrees at the graduate level, the Master of Science in Physical Education and the Master of Science in Recreation Education.

The primary goal of the College is to provide the very finest education for every student. To meet demands for fully qualified personnel in Health Education, Physical Education, Physical Therapy and Recreation Education, the College seeks to develop the independent, self-reliant individual.

Professional preparation is based in the liberal arts and sciences, with orientation to each profession beginning in the freshman year. There is a concentration on specific essential skills spaced throughout the programs and on professional theory and practice the last two years. In the junior or senior year, all students synthesize knowledge and skills through supervised experiences in clinical practice in Physical Therapy, student teaching in Physical Education, field experience in Recreation Education and student teaching or field experience in School and Community Health Education. Each curriculum is enriched by cooperative experiences which for the most part are related to a student's area of specialization. At times co-op is professionally unrelated but in every instance is concerned with people, an opportunity which of estimable value in any career.

The facilities of the College are quite diversified. Dockser Hall houses administrative and faculty offices, libraries, gymnasium, dance studio, physiology of exercise laboratory, classrooms, locker and shower facilities, as well as the Department of Recreation Education with the community recreation laboratory, cultural arts area, seminar and research center. Within the Barletta Natatorium the swimming pool, weight room, handball courts, offices, and shower and dressing facilities are located. The Cabot complex attached to Barletta contains large and small gymnasiums, a rifle range, wrestling, boxing and weight machine rooms, an indoor athletic field, offices and extensive locker space.

Professional Preparation

Aims

A View of the Five-Year Program

Facilities



The Physical Therapy Department is located in Mary Gass Robinson Hall. On the third floor are the physical therapy faculty offices, a library, classrooms, and three laboratories. One of the laboratories is specially designed to simulate a modern physical therapy department and is well equipped for the practice of clinical procedures. In addition, there is an attractive reading room known as The Lupean Professional Library. This reading room maintains an up-to-date collection of physical therapy and medical books for use by students and faculty in the program and the College, and supplements the University's Library. These rooms are wired for closed circuit television to carry programs pertinent to the profession. This is also true of Dockser Hall.

The Warren Center serves as a practical laboratory for the College. Its athletic fields and lake, tennis courts, natural setting of woods, fields and streams, winterized cottages and Hayden Lodge provide year-round opportunities for outdoor learning 25 miles from the Boston campus. Courses, conferences, seminars, and workshops are conducted at the Center throughout the year and thus serve University and community needs.

Admission

See page 168 for statements concerning admission. Additional requirements basic to the admission of all prospective majors in the College include: good health, demonstrated ability to work with people, and the physical competence and skills to undertake the prescribed degree program. Full health clearance is required prior to matriculation at the University. In the middler year, all students must be examined by physicians in the University Health Services at a moderate fee, or by their own physicians.

Graduation Requirements *Degrees*

Students graduating in Physical Education, Recreation Education, or Health Education earn the degree of Bachelor of Science in Education and students in Physical Therapy receive the degree of Bachelor of Science in Physical Therapy. These degrees are awarded to qualified candidates who have completed the curricula as prescribed. Student teaching, field experience or clinical practice is an integral part of the curriculum and is required for graduation.

Qualifications *Quantitative*

The quarter hours required in each curriculum differ.

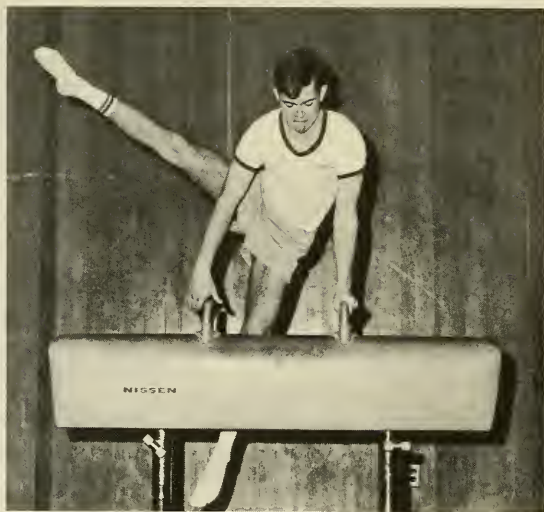
	Q. H.
Health Education	172-175
Physical Education	172
Physical Therapy	170
Recreation Education	172

Students must meet the requirements of the Department of Cooperative Education before they become eligible for their degrees.

Senior year course work and required experiences must be completed in full-time residence at Northeastern University, or in an educational setting approved by the college.

Qualitative

The overall cumulative quality point averages required to enter each class level are explicitly stated in the Student Handbook. Throughout the professional sequence, students must maintain required averages and demonstrate a high level of personal and professional maturity to continue field practice and to be approved for graduation. Because of accreditation recommendations and differences in curricula, qualitative requirement variations may occur.



Transfer students in any curriculum may be accepted in the college at upper-class levels if there are available spaces. Each transcript is individually assessed for qualification, placement and course design.

Candidates who have attained superior grades in their academic work will be graduated with honor. Upon special vote of the faculty, a limited number of this group may be graduated with high honor or highest honor. Students must have been in attendance at the University at least six quarters before they become eligible for honors at graduation.

Physical Therapy is accredited by the American Medical Association and the American Physical Therapy Association, AMA-APTA. Physical Education and Recreation Education are accredited by the National Council for Accreditation of Teacher Education, NCATE. Health Education was formerly accredited in combination with Physical Education but will now have separate accreditation.

There is a uniqueness about Boston-Bouvé. Perhaps it is the personal touch, a keen interest in every young man and woman, individualized advice and counsel, social events and exciting assemblies, professional clubs, Dance Theatre, ski week, summer camp and spring practicum, sports, groups in the study rooms, seminars and research

The Student Advisory Board is the most influential body in the college, with students elected from every class, and from within that group a moderator, secretary and historian elected as officers. Among many activities, the Board conducts assemblies, organizes career days, makes recommendations to the Dean on improvements in the College, promotes an annual book drive for professional schools in foreign countries and for selected institutions in the United States and sends representatives to a variety of University organizations.

Community service is a strong emphasis in every Department—work with retarded, the handicapped, inner-city youth and the aging. In truth, an outstanding characteristic of students in the College is concern for people.

Graduation with Honor

Accreditation

Focus on the Student

DEPARTMENT OF SCHOOL AND COMMUNITY HEALTH EDUCATION

Catherine L. Allen, Ed.D., Ph.D., *Professor and Chairman*

FACULTY

Associate Professor

Helen M. Garrity, Ed.D.,
Executive Officer

Instructors

Ann Maguire, B.S.
Sally Wawzonek, M.S.
Margaret Zaremba, M.S.W.

Visiting Lecturer

D. Patricia Nelson, M.P.H.

Professional Preparation

Aims

Health Education is a teaching profession. It is concerned with teaching not only in elementary and secondary schools, in colleges and universities, but also in community and continuing education centers, and in a diversity of agencies and institutions.

Description of Major

The program of study is an integration of liberal arts and science concentrated in the first two years with professional courses emphasized in the last three. However, Health Education courses begin in the freshman year.

A View of the Five-Year Major

Cooperative education offers alternate periods of work and study which enrich and facilitate learning and, of course, assist the student in financing his/her education. In the senior year, even major synthesizes theory and practice in student teaching in the schools or in field experience in centers, agencies and institutions.

The way of life that an individual chooses in health matters will affect all that he does and dreams of being. The health educator teaches people about health concepts and health maintenance throughout life; the use of health services; active community involvement in health; the solution of personal, family and community health problems; and the fulfilling of potential and the living of a fuller, better, more useful life.

College and University Services

The Department of Health Education conducts the required health courses for professional students in Physical Therapy, Physical Education and Recreation Education in Boston-Bouvé College and in the College of Pharmacy and Allied Health Professions. Electives in health are offered to all University students.

A First Aid, Safety and Preventive Health Education course is conducted on an elective basis and as a requirement in certain curricula.

Special Requirements

All students in Health Education are required to have a full health examination prior to admission and again in the third year.

An activity uniform for Physical Education is required at a cost of approximately \$20.00.

Accreditation

Health Education was formerly accredited as part of Physical Education but will now have separate accreditation by the National Council for Accreditation of Teacher Education, NCATE.

<i>First Quarter</i>	<i>Third Quarter</i>	Sample Freshman-Year
General Chemistry	Nutrition	Program of Studies
English	Biology	in School and
Social Science	English	Community Health Education
Foundations Health Education	Health Problems of the School	
Boston-Bouvé Elective	Child	
	Physical Education	

Second Quarter
 General Chemistry
 Biology
 Social Science
 First Aid, Safety and Preventive
 Health
 Instructional Resources

In addition to the above courses, a student may elect to take Basic ROTC.

Course	Q.H.	Course	Q.H.	Basic Course Requirements
*General Chemistry	6	*Social Science	8	I. GENERAL (AND PROFESSIONALLY RELATED) REQUIREMENTS
*English	8	**Human Development	8	
*Biology	8	Measurement and Evaluation	4	
*Microbiology	4	Introduction to Special		
*Mathematics	4	Education	4	
*Psychology	8	Humanistic Foundations	4	
*Urban Anthropology	4	Physical Education	2-5	
*Anatomy and Physiology	8	General Studies electives	20	
*Anatomy and Physiology	4			

in accordance with NCATE recommendations on general studies, a student could take at least one course each in the symbolics of information, natural sciences, behavioral sciences, and the humanities (from among electives fulfill requirements).

Course	Q.H.	Course	Q.H.	II. PROFESSIONAL REQUIREMENTS— TEACHING SPECIALTY
Foundations of Health Education	2	Public Health and Community Resources	4	
Human Sexuality/Family	4	Organization and Administration of School and Community		
Drug Use and Abuse	4	Health Education	4	
Mental Health	4	*First Aid, Safety and		
Nutrition	4	Preventive Health Education	4	
Seminar in Health Education	4	*Instructional Resources	2	
Health Counseling	4	*Health Problems, School Child	4	
Teaching Procedures/ Curriculum		Concepts in Health, Aging, and Longevity	4	
Health Education for School and Community	4	Supervised Teaching or Field Experience	12	
Communicable/Degenerative Diseases	4			

These courses are usually taken in the Freshman year.
These courses taken in the Sophomore year are professionally related, Anatomy and Physiology, for example. Health concentration begins in the third year.

DEPARTMENT OF PHYSICAL EDUCATION

Carl S. Christensen, Ph.D. *Professor and Chairman*

FACULTY

Professors

John W. Fox, Ed.D.
Kathryn Luttgens, Ph.D.
Richard C. Zobel, Ed.D.

Associate Professors

Kerkor Kassabian, Ed.M.
Mary Nicholson, M.S.
Sarah Robinson, Ph.D.
Jeanne Rowlands, M.A.
Harold A. Walker, A.B.

Assistant Professors

Glenn A. Boden, M.Ed.
Robert S. Curtin, Ed.M.
William J. Gillespie, Ed.M.
Evelyn Howard, M.S.
Barbara Philbrick, Ph.D.
Judith Roberts, M.Ed.
Kenneth Vanderpool, Ed.D.

Instructors

Marilyn Cairns, M.S.
Sandra Ann Hagen, M.F.A.
Susan Snyder, B.S.
Diane Willcox, B.A.

Professional Preparation

The Department of Physical Education conducts the undergraduate professional program for students majoring in Physical Education, electives for all University students, the intramural/club program for men and women, and the Women's Athletic and Recreation Association which includes women's varsity competition.

Aims

The professional program in Physical Education is designed to prepare specialists capable of developing the materials and methods appropriate to teaching physical education in public and private schools at all levels—elementary, secondary and college. Its graduates are qualified as athletic coaches, physical education teachers, directors of athletics, supervisors of physical education and leaders in YMCA and YWCA and other youth organizations.

Description of Major

Students majoring in this program receive a strong background in general education and liberal arts. Elective hours are required in each of the areas of Science, Social Science, and Humanities. Courses in Physical Education include history, philosophy, principles, curriculum development and class procedures, measurement and evaluation, kinesiology, exercise physiology, and perceptual-motor development. Students are well grounded in the techniques of coaching the various individual, dual and team sports, and in adapting these activities to the needs of the handicapped. Because of the close and overlapping relationship among the fields of Physical Education, Health and Recreation, Physical Education majors may take courses in these areas.

Areas of emphasis include Athletic Training, Dance or the Foundation Sciences with concentration in the elementary school, secondary school or generalist program. Class advisers will be available to assist students as selections are made.

The development and demonstration of personal skill in performance and teaching are an integral part of the professional program. Each student is expected to demonstrate a level of personal skill proficiency and knowledge competency in one activity for each of these areas: (I) Aquatics; (II) Dance; (III) Gymnastics; (IV) Racquet Sports; (V) Individual Activities; (VI) Fall and Winter Team Sports; (VII) Spring and Summer Team Sports. The degree of skill may be demonstrated through competency testing or by taking appropriate electives.* Students will demonstrate at the intermediate level ability in one activity in each of the five of the seven groupings; they must pass advanced level courses in one activity in one skill group. Major students are assigned supervised student teaching responsibilities in elementary and secondary schools throughout the Greater Boston area. In addition, students increase their experience with children through their cooperative work assignments and as counselors in summer camps.

Activity clothing which may cost up to \$85 is required. Fees may be assessed in courses requiring highly specialized equipment, supplies, or off-campus facilities. In the spring quarter of the freshman year there is a required three-week resident program at the Warren Center. An additional fee is charged for room and board.

The professional program in Physical Education is accredited by the National Council for Accreditation of Teacher Education (NCATE). Students who qualify may be certified by the National Athletic Trainers Association.

A broad selection of electives in dance, sports, games, aquatics, and gymnastics is offered for all University students. Most classes are coeducational, although some are limited to men or to women according to the activity.

Focus in the elective program is placed on the life-time use of sports, dance and aquatics for recreational satisfaction and participation.

The Women's Athletic and Recreation Association has, as its prime purpose, the promotion of activity opportunities of an athletic and recreational nature for all undergraduate women students. Throughout the year, intramural and club participation is possible in badminton, basketball, fencing, golf, modern dance, and volleyball. Varsity athletic teams for women include basketball, field hockey, gymnastics, lacrosse, swimming and diving, softball, tennis, and volleyball. Other activities are offered when warranted by student interest and available facilities.

The Northeastern University Dance Theatre affords an opportunity for those students interested in dance as a performing art to choreograph and/or perform in concert. In addition to an annual concert production, the group presents several lecture-demonstrations and concert tours each year. Admission is by audition.

A comprehensive program of intramural and extramural sports is provided students through the media of clubs, leagues, and individual participation. Separate leagues are organized for commuters, dormitory and fraternity students. Intramural sports are organized separately for both men and women. There are also educational activities, and a 'drop-in' program.

A View of the Five-Year Major

** To qualify for beginning aquatics, dance, and gymnastics courses, Physical Education majors must demonstrate competence.*

Accreditation

Electives in Physical Education

Women's Athletic and Recreation Association

The Northeastern University Dance Theatre

Intramural and Extramural Programs

**Sample Freshman-Year
Program of Studies
in Physical Education**

First Quarter
English I
Biology I
Social Science I
Human Movement
Prof. Skills Elective

Second Quarter
Gen. Study Elective
English II
Biology II
Social Science II
Prof. Skills Elective

Third Quarter
Health Probs. of the
College Student
Physical Science
Group Dyn. Practicum
School Observation
First Aid
Prof. Skills Elective

In addition to the above courses, a student may elect to take Basic ROTC

Basic Course Requirements

I. GENERAL REQUIREMENTS

Course	Q.H.	Course	Q.H.
*English I & II	8	**Human Devel. I & II	8
*Biology I & II	8	**Ed. Measurement	4
*Social Science I & II	8	*Math	4
*Health Problems of the College Student	3	General Electives	32

**II. PROFESSIONAL
REQUIREMENTS**

Course	Q.H.	Course	Q.H.
*Human Movement	4	Kinesiology	4
*Physical Science	3	Measurement and Evaluation	4
*Group Dynamics Practicum	4	Historical Prin./Phil.	4
*School Observation	2	Exercise Physiology	4
*First Aid	2	Outdoor Teaching Lab.	2
**Anatomy and Physiology I & II	8	Elementary School Activities	4
Adapted PE	4	Athletic Training	3
Anatomy and Physiology III	4	Administration of PE	4
Perceptual and Motor Learning	3	Curricula Development	3
Critical Teaching Skills	3	Student Teaching	12

Requirements that may be completed in any year

8 Prof. Skill Electives	8
4 Prof. Skills Analysis/Coaching	8
BBC Electives	11

*These courses are usually taken in the Freshman year.

**These courses are usually taken in the Sophomore year.

DEPARTMENT OF
PHYSICAL THERAPY

Katharine Carlisle, A.B., *Professor and Chairman*
Kathryn J. Shaffer, M.S., *Professor and Associate Chairman*
Carl V. Granger, M.D., *Medical Consultant*

Professor	Instructors
Elizabeth W. Van Slyck, M.A.	Nancy Cardinali, B.S.
	Lilly S. Filler, M.S.
Assistant Professor	Janice L. Foster, B.S.
Pauline A. Cerasoli, M.S.	Terry E. Hardy, M.S.
	Nancy B. Leventhal, M.Ed.
Visiting Professor	Bonnie L. MacFarlane, B.S.
Whitney R. Powers, Ph.D.	Barbara A. Sloop, B.S.
	Caroline Williams, B.S.

FACULTY

The Department of Physical Therapy, constantly aware of the changing concepts, trends and present day challenges in comprehensive health care, is dedicated to the educational preparation of those who will provide physical therapy services of the highest quality. The program is designed to prepare physical therapists who will be concerned not only with those treatment procedures directed toward helping the patient gain functional independence, but concerned also with his emotional and socio-economic status and needs in terms of recovery.

Professional Preparation
Aims

Physical Therapy is one of the health professions contributing to the delivery of comprehensive medical care. The physical therapist is highly skilled in evaluation procedures and in the planning and execution of treatment programs appropriate to the condition or disabilities of a patient. In addition, the responsibilities of a physical therapist may include health care planning and community service. The qualified physical therapist administers physical therapy only upon referral by a physician.

Description of Major

Positions in physical therapy are available in general hospitals, children's hospitals, university hospitals, rehabilitation centers, schools or centers for crippled children, and community, state, and governmental agencies. In addition, there are increasing opportunities in teaching and research in physical therapy.

The five-year program in Physical Therapy, based on the Cooperative Plan, is unique in physical therapy education.

A View of the Five-Year Major

The program of study is an integration of liberal arts and sciences and professional courses, with major emphasis on liberal arts in the first two years of the program and on professional preparation in the last three years of the program. The professional courses include such subjects as anatomy, kinesiology, pathology, clinical medicine, neurology, orthopedics, physiology, physical therapy procedures, administration, and practical experience in various hospitals and clinics.



Lecturers from Tufts University School of Medicine and the New England Medical Center Hospitals, as well as from many medical and social agencies in the Boston area, augment the professional staff in the Physical Therapy program.

Supervised clinical education scheduled in the senior year consists of one full-time 12-week block of supervised clinical practice in either the fall or winter quarter. This advanced clinical experience provides the student with opportunities to practice various phases of physical therapy under supervision in preparation for assuming the role of a qualified physical therapist. It is a required course for graduation and carries academic credit. Assignments in clinical practice include Physical Therapy departments throughout the New England, New York, and New Jersey areas in addition to the Boston area.

Students admitted to the Department of Physical Therapy must maintain acceptable standards of scholarship and performance in the prescribed program. Students must also demonstrate adequate health, verbal fluency, essential motor skills, emotional maturity; must complete all required courses; and have a favorable evaluation from clinical practice and co-op experience.

Cumulative quality point averages of 2.0 overall, and of 2.0 in professional courses are required to enter clinical practice in the senior year. Also, there is an additional requirement of C or better in Gross Anatomy which is a prerequisite for any subsequent professional course in the program. Students must maintain required cumulative averages and demonstrate personal and professional maturity throughout the professional sequence to be recommended for graduation and placement. Students completing the prescribed curriculum are eligible to take state examinations for registration.

Special Requirements *Uniforms*

Women may wear the required gymnasium uniform for Physical Therapy laboratory classes beginning in the freshman year. Men are required to wear navy blue shorts and white T-shirts for these classes.

Students are required to purchase regulation uniforms and accessories prior to Supervised Clinical Education. The cost of clinic uniforms is approximately \$75.

Clinical Education

Students on clinical education assignments should plan on additional expenses, including travel, for clinical practice.

Accreditation

The program is approved by the American Medical Association and the American Physical Therapy Association.

Sample Freshman-Year Program of Studies in Physical Therapy

First Quarter

Fund. Mathematics
Basic Animal Biology
English
Health Education
Physical Education

Third Quarter

General Chemistry
Basic Animal Biology
Intro. Physical Therapy
Elective

Second Quarter

Fund. Mathematics
General Chemistry
English
Intro. Physical Therapy
Physical Education

In addition to the above courses, a student may elect to take Basic ROTC.



Course	Q.H.	Course	Q.H.	Basic Course Requirements
*Fundamentals of Mathematics	8	**Basic Physics	9	I. GENERAL REQUIREMENTS
*Basic Animal Biology	8	**Human Physiology	6	
*English	8	**Human Anatomy	4	
*General Chemistry	10	**Basic Psychology	4	
*Physical Education	2	Child/Adol. Psychology	4	
		6 General Electives	24	
Course	Q.H.	Course	Q.H.	II. PROFESSIONAL REQUIREMENTS
*Intro. Physical Therapy	3	Applied Physiology	4	
**Intro. Physical Therapy	2	Prof. Lit/Research	2	
*Health Education	3	Clinical Psychiatry	3	
Gross Anatomy	5	Public Health	3	
Applied Anatomy	5	Clinical Seminar	3	
Physical Therapy I, II, III	12	Clinical Education	8	
Pathology	3	Rehabilitation	2	
Clinical Medicine I, II, III	8	Administration	3	
Physical Therapy IV, V, VI	11			
Neuroanatomy	3			

*These courses are usually taken in the Freshman year.
**These courses are usually taken in the Sophomore year.

DEPARTMENT OF RECREATION EDUCATION

Albert H. McCay, Ed.D., *Professor, Chairman and Director of the Warren Center*

FACULTY

Associate Professors

Howard Jeffrey, D.R.
Richard Morrison, Ed.D.
Frank Robinson, M.S.

Assistant Professors

Robert E. Cipriano, M.A.
Elaine Eliopoulos, M.S.
Reginald Haché, A.D.
Alae-Eldin Sayed, Ed.D.

Instructor

Sylvia Dawson, M.S.

Lecturers

Debra Bloom, M.S.
Lydia Casavant, M.S.
Joseph Curtis, M.S.
Ellen Lynch, B.A.
Mary Alice Queiros, B.S.

Professional Preparation

Aims

Recreation Education is a vital profession for a rapidly changing world. Prospects for the future clearly point toward an increase in leisure time and more income available for it. Public recognition of the need for trained administrators in this area, for people of all ages during all seasons of the year, has created new demands for career personnel.

Description of Major

Government agencies and educational institutions are expanding their programs. Recreation opportunities exist in community organizations, schools, business and industry; in the Red Cross, Peace Corps, and Armed Forces; in camps, resorts, and parks; in departments of recreation in schools and colleges; in new recreation centers developed by youth groups; and in state, regional, and national parks.

A View of the Five-Year Major

The cooperative program of study is based in the liberal arts and sciences, with courses in professional education beginning in the freshman year.

The acquisition of knowledge and skills in arts and crafts, camping, dramatics, music, sports, dance, aquatics, hobbies, and therapeutic recreation for special groups is combined with training in leadership, organization, and administration.

Outdoor education, camp counseling, school camping, recreation, and park programming are essential aspects of the curriculum, and the Warren Center of Northeastern University offers an excellent and unique teaching-learning laboratory within easy commuting distance of Boston.

Supervised Field Experience, both indoors and outdoors, provides exciting, and at the same time, practical opportunities to work with children, youth, and adults. In addition, the Cooperative Plan provides seven quarters of practical, on-the-job experience in youth agencies, municipal recreation departments, hospitals and institutions, homes for the aging, and other selected settings.

Undergraduates in the Department of Recreation Education may select any one of three emphases: Community Recreation Education, Therapeutic Recreation for work with the retarded, the handicapped and the aging, or Outdoor Recreation Education and Conservation.

Students are scheduled for their two-week resident camp experience at the end of the freshman year at the Warren Center in Ashland, approximately 25 miles west of the Boston Campus. The student cost for this experience is presently \$170.00.

During the winter quarter of the junior or senior year a week in New Hampshire is scheduled for ski and winter sports instruction. The student cost is approximately \$90.00.

There is no required uniform for Recreation Education students in activity courses.

The Professional Program in Recreation Education is accredited by the National Council for Accreditation of Teacher Education (NCATE).

Special Requirements

Accreditation

First Quarter
English
Speech Fundamentals
Social Science
Orientation to Recreation
Recreation Skills

Third Quarter
Basic Biology
Health Education
Social Science
Recreation Skills

Second Quarter
Basic Biology
English
Social Science
Recreation Skills

Third Quarter A
Outdoor Education and
Camp Leadership

Sample Freshman-Year Program of Studies in Recreation Education

In addition to the above courses a student may elect to take Basic ROTC.

Course	Q.H.	Course	Q.H.
*Biology	8	**Natural History	8
*English	8	Workshop Drama	4
*Social Science	12	Public Health	3
*Speech Fundamentals	3	Philosophy of Education	4
*Health Education	3	4 Electives (General)	16
**Human Development	8		

Basic Course Requirements

I. GENERAL REQUIREMENTS

Course	Q.H.	Course	Q.H.
Recreation Skills I, II, III	11	Winter Sports	1
Orientation to Recreation	1	Administration of Recreation and Parks	4
Recreation Skills IV & V	6	Recreation Budgeting and Finance	3
Camp Leadership	4	Supervised Field Work	16
Anatomy and Physiology	6	Research and Readings	4
Arts and Crafts	3	Camp Administration	3
Conservation and Outdoor Education	3	Recreation Activities for the Atypical	3
Introduction to Youth Groups	3	Philosophy of Recreation	3
Introduction to Therapeutic Recreation	3	Senior Seminar	4
Educational Resources	3	Outdoor Education for the Handicapped	3
Outdoor Education II	3	School Camping	3
Survey of Outdoor Facilities	3	Workshop in Adaptives	3
Dance and Cultures	3	Community Schools	3
Group Dynamics	3		
Methods and Materials	3		

II. PROFESSIONAL REQUIREMENTS

*These courses are usually taken in the Freshman year.

**These courses are usually taken in the Sophomore year.

College of Business Administration

James S. Hekimian, D.B.A., *Dean*

Philip T. Crotty, Ed.D., *Associate Dean*

John J. Jordan, M.A., *Associate Dean, Director of Graduate School*

Harley H. Anderson, M.B.A., J.D., *Assistant Dean*

FACULTY ACCOUNTING GROUP

Professors

Carlo E. Gubellini, M.B.A.,

Faculty Coordinator

Joseph M. Golemme, M.A.,
C.P.A.

Lawrence H. Malchman,
Ed.M., C.P.A.

Albert Slavin, M.S., C.P.A.

Associate Professors

Joseph R. Curran, Ph.D.

Richard Lindhe, Ph.D.

Assistant Professors

Clairmont Carter, Ph.D.

Robert Farrar, M.B.A.

Michael Feters, D.B.A.

Steven D. Grossman, Ph.D.

Paul A. Janell, M.B.A.

Raymond Roy, M.B.A.

FINANCE GROUP

Professors

Wesley W. Marple, Jr., D.B.A.,

Faculty Coordinator

Robert Caplan, D.B.A.

Anghel N. Rugina, Ph.D.

Edward R. Willett, Ph.D.

Associate Professors

Saverio Cerullo, M.B.A.

Robert J. Hehre, D.B.A., C.P.A.

Assistant Professors

Stephen M. Duckworth, D.B.A.

Harold D. Fletcher, Ph.D.

GENERAL MANAGEMENT GROUP

Professors

Russell W. Olive, D.B.A., P.E.,

Faculty Coordinator

Dean S. Ammer, Ph.D.

Lyman A. Keith, M.B.A.

Daniel J. McCarthy, D.B.A.

Associate Professors

Warren Briggs, Ph.D.

Angelo Fiumara, LL.B.

Robert Lieb, D.B.A.

Daniel Scioletti, LL.B.

Barry Shore, Ph.D.

Assistant Professors

Victor B. Godin, D.B.A.

Robert Parsons, M.B.A.

Charles Shelley, Ph.D.

HUMAN RESOURCES GROUP

Professors

Richard B. Higgins, Ph.D.,

Faculty Coordinator

A. Howard Myers, Ph.D.

Arthur H. Walker, D.B.A.

Associate Professors

Paul Croke, Ph.D.

Christine L. Hobart, D.B.A.

Edward Marshall, Ph.D.

Andre P. Priem, M.B.A.

Herman Rochwarg, Ph.D.



Assistant Professors

Thomas Anderson, M.B.A.
Michael Brimm, M.B.A.
Jeffrey A. Timmons, D.B.A.

**CENTER FOR
MANAGEMENT
DEVELOPMENT**

Associate Dean and Director

Richard J. Santos, M.A.

MARKETING GROUP

Professors

Charles H. Dufton, M.A.,
Faculty Coordinator
Charles J. Collazzo, Jr., Ph.D.
Philip R. McDonald, D.B.A.
Robert H. Minichiello, D.B.A.

Associate Director

John J. Leary, M.B.A.

**Coordinator of Special
Programs**

Bric A. Wheeler, B.S.

Associate Professors

Robert M. St. Clair, Ph.D.
Dharmendra Verma, Ph.D.
Frederick Wiseman, Ph.D.

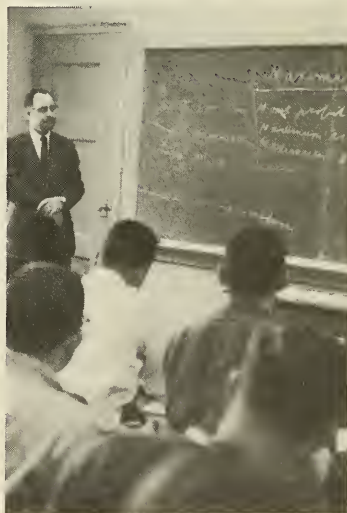
Assistant Professors

Mark M. Moriarty, M.A.

The College of Business Administration offers programs of study in the principal fields of business. Concentrations are offered in the following areas: Accounting, Finance and Insurance, Industrial Relations, International Business, Management, Marketing, Small Business Management, and Transportation, or in General Business, whereby a student may select from various concentrations. Forty to sixty percent of the course work in these programs is concentrated in the arts and sciences to ensure a liberal education in addition to a sound preparation for a career in business administration. These programs are offered on the five-year Cooperative Education Plan, under which students gain substantial practical experience in the fields for which they are preparing as an integral part of their undergraduate course of study.

The programs are offered to prepare men and women for positions of administrative responsibility in business, governmental, and other organizations. Preparation for administrative positions requires an acuteness of mind in the recognition and solutions of problems. In order to accomplish this goal, the business student is given a broad understanding of business and organizational problems, as well as first-hand knowledge of effective methods of solving them. In addition, the broader scope of the business firm must be understood, especially its role and responsibility in community, national, and international relations.

Professional Preparation



Aims In keeping with the current trends in collegiate education, the educational policy of the College aims:

1. To develop attitudes and ideals that are ethically sound and socially desirable.
2. To cultivate an appreciation of the social, political, and economic developments to which the business firm must adjust and adapt.
3. To develop the habits of accurate thinking that are essential to sound judgment.
4. To provide an opportunity for the student to develop a specialization in business in accordance with his interests and talents.

A View of the Five-Year Program

The upper-class program of study assimilates the practice of modern business management and administration with elective courses in liberal arts and other non-business areas.

A concentration in Accounting will prepare students for professional public accounting, as well as for positions in private industry or governmental service. The concentrations in Finance and Insurance, Industrial Relations, International Business, Management, and Transportation, when combined with the experiences gained in both business and non-business organizations on cooperative work assignments, will give students the experience and educational background for almost any type of administrative position for which their interests and abilities qualify them.

The business training and experiences during cooperative work periods will be most important factors in helping students determine the specific type of work and kind of organization with which they would like to be associated after graduation.

An increasing number of qualified graduates of the College of Business Administration see fit to continue their formal education in graduate programs in order to extend their professional and research abilities to better serve employers in business and industry or to prepare themselves for careers in college-level teaching.

Students who plan to continue their formal education by enrolling in a law school after graduation will find that the undergraduate program in the College of Business Administration provides an excellent foundation. Many careers in law are directly involved in the business world: in large corporations or in private practice. The College's curriculum provides a broad understanding of the business environment, as well as specific skills in the problems of operating a business in the socio-legal environment.

While the Association of American Law Schools does not recommend particular courses or curricula for prelegal students, it does advise that undergraduates build skills in comprehension and oral expression; develop critical understanding of the human institutions and values with which the law deals and the creative power of thinking. The flexibility and liberal arts content of Northeastern's Business Administration curriculum allow a student to fulfill these requirements, while at the same time he acquires a specialized skill in and knowledge of the field of business management.



The College makes use of the problem and the case methods of instruction in addition to the lecture and recitation system. Introductory and basic tool courses are, for the most part, presented on a lecture-problem basis. A large proportion of the classwork of the upper-class years consists of discussion, analysis, and reports on specific business problems and cases. Students are encouraged to analyze propositions, to challenge unsupported assertions, to think independently, and to support their thinking with logic and facts. Frequent verbal presentations and written reports are required. To facilitate the case method of instruction, a special classroom was designed for the College.

Students may qualify for the degree of Bachelor of Science in Business Administration in one of the following areas of concentration: Accounting, Finance and Insurance, Industrial Relations, International Business, Management, Marketing, Small Business Management, and Transportation.

Candidates for the Bachelor of Science degree must complete all of the prescribed work of the curriculum in which they seek to qualify. This presently totals 177 quarter hours of credit. The degree conferred not only represents the formal completion of the subjects in the selected courses of study but also indicates professional competence in the designed area of concentration. An overall average grade of C is required for graduation.

The final three quarters immediately preceding graduation must be completed in residence at Northeastern University.

Candidates who have achieved superior grades in their academic work will be graduated with honor. Upon special vote of the faculty a limited number of this group may be graduated with high honor or with highest honor. Students must have been in attendance at the University at least six quarters before they can become eligible for honors at graduation.

The Undergraduate Program of the College of Business Administration is fully accredited by the American Assembly of Collegiate Schools of Business.

The Sample Freshman-Year Program of Studies and the General Requirements for the College of Business Administration are the same for all the Concentration areas.

First Quarter
Introduction to Business
Math I
Psychology I
L.A. Elective

Third Quarter
Accounting II
English II
Psychology II
L.A. Elective

Second Quarter
Accounting I
Math II
English I
L.A. Elective

Students who will complete the Reserve Officer Training Course are permitted to drop one elective each quarter of their senior year.

The College of Business Administration has no physical education requirement. Students wishing to take courses in physical education may take a maximum of eight (8) quarter hours as elective credit.

Facilities

Graduation Requirements

Graduation with Honor

Accreditation

Sample Freshman-Year Program of Studies in the College of Business Administration

Basic Course Requirements**I. GENERAL REQUIREMENTS**

Course	Q.H.	Course	Q.H.
*Math I	8	**Introduction to Marketing	4
*English I & II	8	**Quantitative Methods I & II	8
*Found. of Psychology I & II	8	Organizational Behavior I & II	8
*Introduction to Business	4	Business and Society	4
*Accounting I & II	8	Business Policy	4
**Economics MACRO	4	Placement Techniques	1
**Economics MICRO	4	Non-Business Electives	40
**Introduction to Financial Activity	4		

*These courses are usually taken in the Freshman year.

**These courses are usually taken in the Sophomore year.



ACCOUNTING CONCENTRATION

Professional Preparation *Aims*

The curriculum is designed to provide students with professional competence to enter any of the major fields of employment—public, private, and government. It is further designed to provide a broad, general knowledge of the field of business and the environment.

Description of Concentration

Accounting encompasses a broad range of activities. These include all phases of record-keeping, internal reporting, financial planning, cost control; the design and installation of systems and procedures; and the application of electronic and other modern business methods to these activities.

Accountants in any of the three major fields of employment—public, private, and government—may specialize in such areas as

auditing, tax work, cost accounting, budgeting and control, or systems and procedures. The Federal government employs accountants as Internal Revenue agents, investigators, and bank examiners, as well as in regular accounting positions.

Accounting is the second largest field of professional employment for men. Of more than 500,000 accountants and auditors engaged in professional accounting work, over 100,000 are certified public accountants who have passed rigorous examinations prescribed by law in their states. The certified public accountant has been called "the guardian of the conscience of the business community."

Accounting, the nerve center of business today and one of the fastest-growing professions in the United States, is an exacting field. It seeks men and women who like to solve mathematical problems, who enjoy working with statistics, who are accurate, and who enjoy the process of reasoning and interpretation which characterizes accounting.

The first year is spent surveying the political and social institutions that underlie the conduct of business. Approaching his sophomore year, a student will consult with his faculty adviser and his coordinator from the Department of Cooperative Education about his work assignment.

In the Accounting concentration, courses may include such technical subjects as Accounting Theory and Practice, Cost Accounting, Auditing, and Taxes, along with Economic Problems, Statistical Analysis, Government Regulations, and General Studies.

Students in private accounting and governmental accounting will be involved in such activities as planning and control, financial analysis, information systems design and implementation, external financial reporting, and managerial decision-making.

The field of accounting demands persons of ability and education. The type of education varies for each area and students should discuss the possibilities with members of the accounting group. Those concerned with external reporting and auditing would take courses such as Accounting Theory, Auditing, and Taxes; those interested in accounting for management decision-making would take courses such as Accounting Planning and Control, Management Accounting, and Quantitative Analysis for Accountants, as well as various courses in the quantitative, behavioral and managerial fields.

Students who intend to become Certified Public Accountants (C.P.A.) may take 13 courses (52-quarter hours) in this area beyond the core introductory courses in accounting.

The Sample Freshman-Year Program of Studies and the General Requirements for the College of Business Administration are the same for all the Concentration areas. See pages 51, 52.

Course	Q.H.	Course	Q.H.
Intermediate Accounting I & II	8	B.A. Elective	4
Cost Accounting I & II	8	Open Elective (Business or non-business)	32
Accounting Theory and Practice	4		
Accounting Planning and Control	4		

*A View of the
Five-Year Concentration*

II. PROFESSIONAL
REQUIREMENTS

FINANCE AND INSURANCE CONCENTRATION

Professional Preparation Aims The Finance and Insurance concentration of Northeastern's College of Business Administration has two chief objectives:

1. To provide a series of courses that will acquaint students with the technical aspects of all fields of finance and the fundamentals of insurance, and
2. To provide a broad, general knowledge of the field of business.

Description of Concentration Students interested in careers in the areas of security analysis, estate planning, corporate finance and control, security or insurance brokerage, underwriting, credit management, banking, and other fields requiring the management of funds select the Finance and Insurance concentration.

Financial institutions perform indispensable services for present-day business and industry. A list of these institutions must include banks, insurance companies, investment houses, credit concerns, financial exchanges, business forecasting organizations, financial service institutions, mortgage companies, national and local real estate brokerage firms and appraisers.

There are career opportunities in all areas of business, industry and government, where financial planning and operation are a vital necessity.

A View of the Five-Year Concentration Sophomores will study Introduction to Finance, together with introductory courses in other business fields. Specialization occurs in the upper-class years, with the study of advanced courses in insurance, investments, and security markets. Other courses, particularly in the broad field of economics, are available to provide a well-rounded education.

Concentrators in this area normally take four courses, Corporate Financial Management, Interpreting Financial Data, Financial Planning, Money and Economic Activity, in their middler year. At least two other courses are usually taken in the junior or senior years in one of the following sub-fields of finance: Managerial Finance; Financial Analysis; Management of Financial Institutions; and Insurance. Independent Study is always an appropriate elective.

All courses offered by the Department are open to students who have taken prerequisite courses without regard to their areas of concentration. In special circumstances instructors may waive prerequisite courses. Because of staffing constraints, not all courses are offered every year.

- I. **MANAGERIAL FINANCE, sub-field** The basic objectives of the finance function in the modern-day corporation or business entity are twofold: (1) To provide the funds needed by the firm on terms that are most favorable in the light of the organization's plans; and (2) To participate in the management of the flow of funds within the business in such a manner so as to maximize the realization of the organization's objectives. The capital structure of the business and the optimal manner in

which the assets of the business should be held are key concerns of financial management.

With only minor differences in emphasis, these same broad objectives hold for the finance function in non-profit organizations, including those in the public sector (e.g., units of government).

The area of specialization is broadly based within the subject area and is applicable to a variety of financial institutions and to a variety of positions within the institutions.

The three major topical considerations of the area of specialization will be:

1. The institutional structure of the financial system and the relationship between the financial system and the surplus and deficit units of the whole economy;
2. Asset, liability and capital management problems of financial intermediaries;
3. Investment analysis and portfolio management policies appropriate to different financial intermediaries.

The general understanding developed in this concentration should benefit all students in managing their own affairs as well as those seeking professional careers in organizations where the investment function is paramount such as, industrial and utility corporations, real estate developments, financial institutions, and many governmental agencies. The specialized skills and principles developed in the concentration should benefit those students seeking careers as investment managers or security analysts with organizations such as:

Stock exchanges, investment advisory firms, brokers-dealers, underwriters, mutual funds, and other investment companies which are a part of the securities markets; or

Insurance companies, commercial banks, saving and loan associations, trust companies, mutual savings associations, pension funds and organizations involved in the activities of the securities markets; or

Federal and state governmental agencies such as the SEC, FDIC, Treasury Department, IRS and others having regulatory responsibilities regarding the securities markets and its participants.

The Insurance concentration is divided principally between the insurance needs of individuals and businesses covering a wide variety of risks. The basic elements are designed, not only to reduce existing risks, but also to establish frameworks within which future risks and uncertainties can be analyzed and managed.

The Sample Freshman-Year Program of Studies and the General Requirements for the College of Business Administration are the same for all the Concentration areas. See pages 51, 52.

II. MANAGEMENT OF FINANCIAL INSTITUTIONS, sub-field

III. INVESTMENT AND MANAGEMENT ANALYSIS, sub-field

IV. INSURANCE AND RISK MANAGEMENT, sub-field

Course	Q.H.	Course	Q.H.
Corporate Finance	4	Finance Electives	8
Interpreting Financial Data	4	Business Administration Electives	4
Money and Economic Activity	4	Open Electives (Business or non-Business)	32
Financial Planning	4		

II. PROFESSIONAL REQUIREMENTS

INDUSTRIAL RELATIONS CONCENTRATION

Professional Preparation

Aims

A business that employs more than one or two persons must establish personnel policies, through various techniques and methods, which pertain to that business. Of all the factors that affect the success of a business organization, none is more vital than the people involved within and outside the organization. A business will set up a special department known as the "Personnel Department," or the "Industrial Relations Department," or the "Employee Relations Department" to help the various managers *manage* the human resources within the organization, and help solve "people" problems.

Industrial relations personnel work closely with engineers and production supervisors and are very much concerned with viewing the employee as a person and not just his performance as a worker. To develop skills in the art of human relations is a major objective of the Industrial Relations concentration.

Description of Concentration

Industrial Relations is closely related to Management. If one were to choose this program of studies, he might be employed as a supervisor in job analysis or placement, employment interviewing, industrial accident prevention, public relations, labor-management relations, training or recreational programs for employees, or psychological and aptitude testing. A student might supervise an employee suggestion system or direct a company training program.

Responsibility for the development of industrial publications is usually carried by members of the industrial relations staff.

A View of the Five-Year Concentration

Opportunities exist in the field of labor-management relations in business and non-business organizations. Both unions and management offer positions in personnel administration, collective bargaining, and wage and salary administration. As collective bargaining has developed in the public sector, opportunities have become available for specialists in industrial relations in local, state and Federal government organizations.

Among the courses a student in this concentration will take are: Organization Behavior, Collective Bargaining, Labor Law, Business and Society, and Labor Economics.

The importance of personnel and labor relations has grown immensely during the past 40 years, as enterprises have grown in size and society has become increasingly interested in the welfare of workers. It is because of concern for the latter and the improvement and maintenance of the business organization that a personnel or industrial relations department performs functions such as active recruitment and selection of employees, training, wage studies, time and motion studies, labor relations, work records, and termination procedures.

The Sample Freshman-Year Program of Studies and the General Requirements for the College of Business Administration are the same for all the Concentration areas. See pages 51, 52.

Course	Q.H.	Course	Q.H.	II. PROFESSIONAL REQUIREMENTS
Labor Economics	4	Business Administration		
Personnel and		Elective	16	
Industrial Relations	4	Open Elective (Business		
Labor Law	4	or non-business)	28	
Collective Bargaining	4			

INTERNATIONAL BUSINESS CONCENTRATION

Area Coordinator—Professor Dharmendra Verma

Several factors in recent years have contributed to a rapidly increasing need for qualified people in the field of international business. The growth of multinational firms, expansion of international trade, and the growth of regional international trading blocs have created a shortage of skilled managers who are qualified in analyzing the complexities of international business problems. This concentration aims at developing students to meet these management needs.

The undergraduate concentration in International Business Administration is part of a program curriculum consisting of (1) a broad liberal education provided by the liberal arts course requirements; (2) a basic education in business administration provided by the core CBA course requirements; and (3) a specialized education in International Business Administration. The specific objectives of the concentration are to develop an understanding of the problems involved in operating business enterprises across national boundaries and to develop an ability to analyze the operations of business enterprises in multinational environments.

The International Business Administration concentration consists of six courses, two required courses and four electives from a specified International Business Administration listing.

The International Business Administration concentration has been designed to provide maximum flexibility for student scheduling. This flexibility allows students to have dual concentrations, i.e., students may concentrate in International Business Administration and in any other area offered by the College of Business Administration with a minimum of additional required courses. The specified electives can serve the dual purpose of fulfilling general

Professional Preparation Aims

Description of Concentration

business and liberal arts elective requirements for the College of Business, as well as fulfilling the requirements for a concentration in International Business Administration. All CBA Courses which are offered as part of the International Business Administration concentration will be available to students who are following a non-concentration curriculum during their middler, junior and senior years.

*A View of the
Five-Year Concentration*

Careers in international business are available in most companies which carry on trade or manufacturing operations in foreign countries. An increasing number of multinational firms are requiring that candidates for their top management positions have gained experience in international operations. Large banks and insurance companies also need managers who understand international business.

Students following this concentration may find employment opportunities both in the United States and in foreign locations. Needless to say, the opportunity for foreign travel is frequently available. Government, trade associations, and large unions also provide employment opportunities for students who have studied international business.

The Department of Cooperative Education is currently working on generating co-op jobs in some of the above areas. A small number of internationally-oriented co-op jobs already exist.

Students who choose this concentration will develop an understanding of the environmental, economic, political, and social constraints impinging on international business. They will also develop skills in analyzing the financial, marketing, and operational strategies of the multinational firm.

Liberal arts electives such as modern languages, political science, international economics, geography, and history, all appropriate to the understanding of international relations, are highly recommended to complement this concentration.

The Sample Freshman-Year Program of Studies and the General Requirements for the College of Business Administration are the same for all the Concentration areas. See pages 51, 52.

**II. PROFESSIONAL
REQUIREMENTS**

Course	Q.H.	Course	Q.H.
Introduction to Int'l. Business	4	Business Administration Electives	12
Seminar in International Business	4	Open Electives (Business or non-business)	32
Business Administration Electives (International List)	8		

**International Business
Administration Electives**

Note: Two general requirement Liberal Arts courses must be selected from the International List.

International Business Administration—CBA Electives

International Accounting
Comparative International Management
International Financial Management
International Marketing
International Transportation and Distribution Management

Language and Culture
Individual and Culture
Evolution and Society
Culture in Transition
Economic Anthropology
Culture and Change
Social Change
Comparative Government
World Politics
International Relations
International Organization
International Law
Comparative Economics
Economic Development
International Economics



MANAGEMENT CONCENTRATION

The curriculum in Management is designed to appeal to those whose interests lie in the broad areas of business rather than in more specialized fields. It seeks to encourage the breadth and depth of vision demanded for successful business leadership in a highly complex society.

Broad in concept, it is aimed at preparing the student for a career in administration rather than for an immediate or particular position.

A student who concentrates in Management will study accounting as a tool of management rather than as a means of developing proficiency as an accountant. He will study several areas of marketing to gain a better appreciation of marketing's role in business operations. The role of a sound human-relations program in the modern business organization also will be considered. Problems relating to the physical aspects of management will be studied: the plant, its facilities, its internal organization, and the problems involved in the production of goods and services.

The courses in Management vary a great deal in their content and in the way they are taught. Several courses of study pertain to theory and are conducted on a straight lecture basis. Other courses, especially in the last two years of college, afford an opportunity for research, new ideas, and self-expression. Together, these courses will provide a foundation for a successful career in management.

The curriculum and teaching methods center around the development of basic skills and knowledge appropriate to administration, rather than upon specialized functional techniques. Although the case method of study is extensively used, a variety of teaching methods are employed consonant with particular course objec-

Professional Preparation Aims

Description of Concentration

A View of the Five-Year Concentration

tives. The basic objectives of the concentration are: to confront the student with meaningful learning experiences, to increase skills and knowledge in basic disciplines underlying administrative practice, and to develop judgment and skills in problem analysis and decision making in complex organizations.

The Sample Freshman-Year Program of Studies and the General Requirements for the College of Business Administration are the same for all the Concentration areas. See pages 51, 52.

II. PROFESSIONAL REQUIREMENTS

Course	Q.H.	Course	Q.H.
Cost Accounting	4	Production Management	4
Information Systems	4	Business Administration	
Personnel and		Electives	8
Industrial Relations	4	Open Electives (Business	
Legal Aspects	4	or non-Business)	32



MARKETING CONCENTRATION

Professional Preparation *Aims*

A business organization not only designs and manufactures products, but also markets and sells them—to manufacturers, to wholesalers, to retailers, and to consumers. This is what a concentration in Marketing is all about.

Description of Concentration

All the business activities that direct the flow of goods and services from producer to consumer are classified as marketing. The marketing process begins by one's determining the needs and wants of customers. Once these wants and needs are established, the organization's first objective is to produce a good or service to satisfy a particular consumer. The first objective creates the production function and marketing function. Performance of the production function creates form utility for the customer. The marketing functions and the resulting marketing organizations create time, place, and possession utility for customers.

The utility derived from the consumption of the product or service determines the value that the customer places on it. This value determines the price that he is willing to pay for it. If the price the customer is willing to pay for the product is sufficient to cover the costs of production and marketing, the organization will have achieved one of its objectives, and it can then continue to satisfy the wants and needs of customers and the other contributors to a business organization.

The marketing functions of buying, selling, transporting, storage, market information, financing, risk-bearing, and grading are performed by marketing organizations. The overall responsibility for these functions rests with the marketing manager. The organizations that perform these managerial and operative functions may be classified as direct marketing organizations, organizational middlemen, physical supply organizations, and facilitating organizations, depending on what types of utility they create in the movement of goods and services from a producer to the ultimate consumer.

Weekly meetings of the Advertising Club and the student chapter of the American Marketing Association afford students an opportunity to further their interests in these areas and to discuss issues with leaders in these fields.

In a variety of courses, by lectures and class discussion, through analysis of case material and preparation of written reports, students learn how goods and services are marketed.

Without successful marketing and advertising, the products of industry remain unsold. More and more companies are finding that today's tempo of progress and high levels of production require up-to-date techniques of marketing to generate an increasing volume of sales.

As a member of the management policy group, the marketing executive takes a broad view of all aspects of business management and policy. He can also serve effectively as a trained specialist in his own area.

With success in the market vital to every company, the need for adaptable and informed marketing management—and therefore, opportunities of careers in marketing—exist in every type of business and industry, large or small; in manufacturing and wholesaling as well as retailing; in service, research, and administrative organizations; in both consumer and industrial products; in advertising departments, agencies, and media; in sales, product design, research, marketing management, marketing administration, merchandising, and promotion.

The Sample Freshman-Year Program of Studies and the General Requirements for the College of Business Administration are the same for all the Concentration areas. See pages 51, 52.

*A View of the
Five-Year Concentration*

Course	Q.H.	Course	Q.H.
Marketing Management I & II	8	Business Administration	
Marketing Research	4	Elective	4
Competitive Strategy	4	Open Electives (Business	
Marketing Electives	8	and non-business)	32

II. PROFESSIONAL
REQUIREMENTS

SMALL BUSINESS MANAGEMENT CONCENTRATION

Acting Area Coordinator—Assistant Professor Jeffrey Timmons

Professional Preparation Aims

The concentration in Small Business Management is offered to provide students who plan to operate their own businesses with an opportunity to develop skills necessary for the effective management of small enterprises.

Description of Concentration

In order to generate a comprehensive description of the nature and content of a concentration in Small Business Management, a conceptual scheme representing the life cycle of the smaller firm was developed. This view of the process and nature of the gestation of new firms helps us to envision appropriate educational offerings. In essence, a concentration in this field ought to provide a student with a thorough "start to finish" perspective. Examining some typical "stages" in this gestation process helps to establish some inherent criteria for assessing curriculum needs. Thus, such a concentration will respond to several issues, including:

- (1) What is involved in the basic career decision to become an entrepreneur?
- (2) What are some key sources of business opportunities and how can one assess the feasibility of a particular venture?
- (3) What sources exist for raising venture capital and how does one acquire it?
- (4) What are the critical problems and opportunities in managing successfully a smaller company and what managerial methods are appropriate to deal with these?
- (5) What are the key issues in financing and managing an ongoing, growing venture, and how can these be applied to small ventures?

The new concentration in Small Business Management will provide courses which deal with each of these key questions.

Students following the Small Business Management concentration will take courses which will develop their ability to find and evaluate business opportunities, to secure adequate sources of funds and to organize and manage the various facets of the small business: marketing, manufacturing, finance and control, and personnel.

Small business management presents a student with the opportunity to prepare for a career in which he can be involved in the management of business while maintaining a significant degree of autonomy and independence. Some students will enter this career at graduation, or sometimes even before it. However, many find that first they will obtain experience through their cooperative work and postgraduate employment prior to establishing their own enterprise.

The Sample Freshman-Year Program of Studies and the General Requirements for the College of Business Administration are the same for all the Concentration areas. See pages 51, 52.



*A View of the
Five-Year Concentration*

Course	Q.H.	Course	Q.H.	II. PROFESSIONAL REQUIREMENTS
New Venture Creation	4	Business Administration Electives	8	
Opportunity Analysis & Venture Capital	4	Open Electives (Business and non-business)	32	
Small Business Finance	4			
Small Business Management	4			
Control Systems in Smaller Companies	4			

TRANSPORTATION AND PHYSICAL DISTRIBUTION MANAGEMENT CONCENTRATION

This concentration is taught primarily by the General Management Group.

The need for qualified people in the field of Transportation and Physical Distribution Management has increased rapidly in recent years. In the industrial setting, continued emphasis on cost control and the pressures of widespread distribution have created a demand for people who understand the dynamics of the logistical function which involves inventory control, warehousing, transportation and the interaction of these activities with other functional operations. Growing concern with the economic and service conditions of the transportation industry has also created many governmental positions with Federal, state and local agencies which are engaged in policy development and administration. Carriers such as airlines, railroads and trucking companies similarly are interested in hiring people who are familiar with the operational and regulatory-oriented aspects of their business. Employment opportunities may also be found in consulting and teaching.

The functions of physical supply—transportation and storage—create time and place utility by moving products from places and times of abundance to places and times of scarcity.

Transportation creates both time and place utility by moving products from the producer to the customer. By enabling an organization to serve a national market, transportation allows an organization to take advantage of the economics of mass production. Since large amounts of products are produced in a limited area, transportation must be provided to move these products to customers who may be dispensed over a wide area.

The storage function creates time and place utility by storing products in times of abundance until times of scarcity and making

Professional Preparation Aims

Description of Concentration

physical distribution from places of abundance to places of scarcity. By performing the physical distribution function, an organization can make the products available to the customer when and where he wants them.

*A View of the
Five-Year Concentration*

Course offerings in Transportation and Physical Distribution Management are sequenced so that students who desire only an introductory exposure may take one or several courses as part of a broader business background. An undergraduate concentration in this area consists of six courses. There are three required courses, with the balance of the concentration being composed of electives. Two of these electives may be taken outside the College of Business Administration. These courses are subject to the approval of the student's adviser.

The Sample Freshman-Year Program of Studies and the General Requirements for the College of Business Administration are the same for all the concentration areas. See pages 51, 52.

**II. PROFESSIONAL
REQUIREMENTS**

Course	Q.H.	Course	Q.H.
Principles of Transportation	4	Transportation Elective	12
Physical Distribution Management	4	Business Administration Elective	4
Current Issues in Transportation Policy	4	Open Electives	32

GENERAL CONCENTRATION

Professional Preparation

Aims

Innovation and relevance are key words in the College. The overall curriculum is flexible, encouraging students to tailor their programs to meet individual needs and career goals. A student wishing to set up his own program may do so with the advice of his faculty adviser. In order to accomplish this important task and assist the student a Student Personnel Office with an open-door policy was established and is headed by Dean Harley H. Anderson.

Description of Concentration

Students will be required to select a total of at least seven business electives beyond the Basic Course Requirements.

**II. PROFESSIONAL
REQUIREMENTS**

The Sample Freshman-Year Program of Studies and the General Requirements for the College of Business Administration are the same for all the Concentration areas. See Pages 51, 52.

Course	Q.H.
Business Administration Electives	28
Open Electives (Business and non-business)	32

College of
Criminal
Justice

Norman Rosenblatt, Ph.D., *Dean*

Professors

Frederick Cunliffe, Ph.D.
Stephen Schafer, D.Jur., Prof.
Agrégé
Robert Sheehan, M.A.

Associate Professors

Ronnie R. Deming, Ph.D.
Joseph Senna, M.S.W.

Assistant Professors

Lois Ames, M.S.W.
Haskell Kassler, D.Jur.
Richard Natoli, M.Crim.
Larry Siegel, M.A.
Donna Turek, M.A.

FACULTY

The College of Criminal Justice, established in 1966 under a grant from the Ford Foundation, prepares young men and women for professional careers in Criminal Justice. The curriculum has been designed primarily for students interested in careers in the ever-expanding areas of social and community services. Law enforcement, corrections, rehabilitation and social welfare are some of the careers students pursue. It is expected that a number of graduates will choose advanced study in academic fields including criminology, social work, public administration, and law.

It is evident that this new College is urgently needed to meet a growing social problem of our times. Innovative methods and ideas, as well as basic information, are needed by those involved in community and social service to cope with the growing problems of our society. Those engaged in this important service to society now need much more formal education than in the past.

The College of Criminal Justice offers a five-year academic program on the Cooperative Plan of Education which allows a candidate for the baccalaureate degree to undertake a highly specialized program of study. It is anticipated that "co-op" assignments will include work in police departments, juvenile and adult correctional institutions, and probation, parole, and social agencies.

The student will receive a broad educational background for his future specialized role in criminal justice. Course work in the social sciences, behavioral sciences, and the humanities will be integrated with studies in juridical theory and practice, since the student will be preparing himself for a career involving the social problems of people from all walks of life. The liberal content of the curriculum is not only highly desirable for its value as a foundation upon which his general intellectual development may be

Professional Preparation
Aims

A View of the Five-Year Program



Graduation Requirements



based, but also as an indispensable educational requirement for professional service in his field of special interest.

The graduate must be prepared to judge objectively the many socio-economic problems inherent in the administration of justice in contemporary American society. Obsolete and intellectually antiquated methods of administering justice have no place in a highly developed urban-industrial civilization. The College of Criminal Justice will help prepare the student for a career which will not only be personally productive and rewarding but intellectually stimulating as well. He will become a pioneer in one of America's most important newly emerging professions.

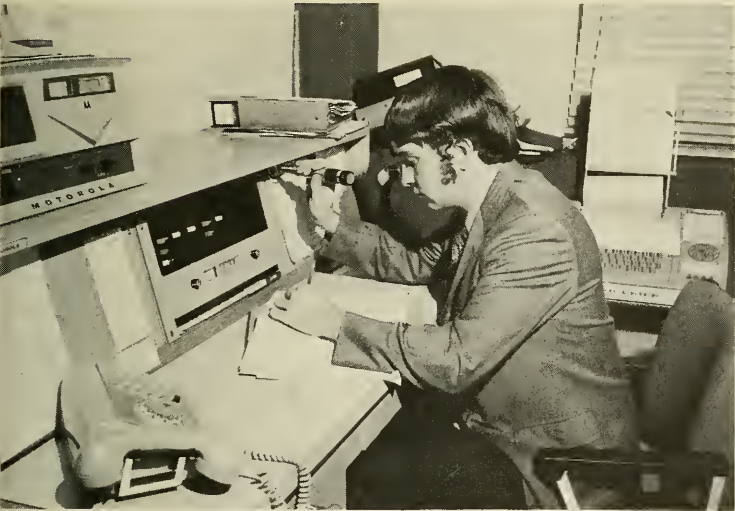
Candidates for the Bachelor of Science degree must complete all of the prescribed work of the curriculum. This curriculum totals 173 quarter hours credit.

Students who undertake the Cooperative Education Program must meet the requirements of the Department of Cooperative Education before they become eligible for their degrees.

No student transferring from another college or university is eligible to receive a degree until at least one year of academic work immediately preceding graduation has been completed at North-eastern.

Graduation with Honor

Candidates who have achieved superior grades in their academic work will be graduated with honor. Upon special vote of the faculty, a limited number of this group may be graduated with high honor or with highest honor. Students must have been in attendance at the University for at least three years before they become eligible for honors at graduation.



First Quarter
English
Economics
ntrod. to Soc./Anthro.
Adm. of Criminal Justice

Third Quarter
Economics
Found. of Psychology
Introd. Political Science
Hist. of Criminal Justice

**Sample Freshman-Year
Program of Studies
in the College of
Criminal Justice**

Second Quarter
English
Found. of Psychology
ntrod. Political Science
Hist. of Criminal Justice

In addition to the above courses a student may elect to take Basic ROTC.

Course	Q.H.	Course	Q.H.
*Principles and Problems of Economics	8	*Introduction to Literature	4
*Introduction to Political Science I & II	8	**State and Local Government	4
*Foundations of Psychology I & II	8	**Functional Human Anatomy I & II or	8
*Introduction to Sociology and Anthropology	4	**Physics for Criminal Justice Students I & II or	8
*Freshman Writing	4	**General Chemistry	8
		Professional Development	1
		Open Electives (14)	56

Basic Course Requirements
I. GENERAL REQUIREMENTS

Course	Q.H.	Course	Q.H.
*Administration of Criminal Justice	4	Constitutional Problems I: The Police and the Criminal Suspect	4
*Topics in History of Criminal Justice	8	Criminal Justice	
Criminology	4	Electives (11)	44
Criminal Law	4		

II. PROFESSIONAL REQUIREMENTS

**These courses are usually taken in the Freshman year.*
**These courses are usually taken in the Sophomore year.*

College of Education

Frank E. Marsh, Jr., D.Ed., *Dean*

Philip J. Rusche, Ed.D., *Associate Dean, Director of
Graduate School*

Charles F. Haley, Ed.M., *Assistant Dean*

Russell J. Call, Ed.M., *Director of Field Placements*

Carlton B. Lehmkuhl, Ph.D., *Assistant to the Dean*

FACULTY *ADMINISTRATION DEPARTMENT

Charles F. Ritch, Jr., Ed.D.
Professor and Chairman

Associate Professors

Joseph E. Barbeau, Ed.D.
Robert S. Butters, Ed.D.
Albert Kovner, Ed.D.

Assistant Professor

Thomas F. Henstock, Ed.D.

*COUNSELOR EDUCATION DEPARTMENT

David R. Cook, Ed.D.
Professor and Chairman

Professors

Gilbert C. Garland, Ed.D.
Thomas F. Harrington, Ph.D.

Associate Professors

Irwin Doress, Ed.D.
Robert W. Read, Ed.D.

Assistant Professors

Barbara Okun, Ph.D.
William G. Quill, Ed.D.

CURRICULUM AND INSTRUCTION DEPARTMENT

Melvin E. Howards, Ph.D.
Professor and Chairman

Professor

Gregory C. Coffin, Ph.D.

Associate Professors

Nicholas J. Buffone, Ph.D.
Leslie A. Burg, Ed.D.
F. Andre Favat, Ed.D.
Maurice Kaufman, Ph.D.
Mary J. Lee, Ed.M.
Robert C. McLean, Jr., Ed.D.
Harold A. Miner, Ed.D.
Sandra M. Parker, Ed.D.
Paul H. Tedesco, Ph.D.

Assistant Professors

Sharon Clark, Ed.M.
Thomas H. Clark, M.A.
Blanche Korngold, Ed.M.,
C.A.G.S.
John F. Maguire, Ed.M.

FOUNDATIONS OF EDUCATION DEPARTMENT

John D. Herzog, Ph.D.,
*Associate Professor and
Chairman*

Professor

E. Lawrence Durham, M.A.

** This Department offers graduate
courses only. Consult the Gradu-
ate School Bulletin for course
offerings.*



FOUNDATIONS

Associate Professors

Wendell R. Brown, LL.B., D.S.
E. Vaughn Gulo, Ed.D.
Mervin D. Lynch, Ph.D.
Joseph Meier, Arbitur, Ed.D.
Irene A. Nichols, Ed.D.
Alvin D. Zalinger, M.A.

Assistant Professors

Ronald E. Baptiste, Ed.D.
Gloria D. Bernheim, Ph.D.
Cheryl C. Hanks, Ph.D.
Kristine E. Rosenthal, Ed.D.

REHABILITATION AND SPECIAL EDUCATION DEPARTMENT

Matthew H. Luzzi, Ed.D.
*Professor and Acting
Chairman*

Professors

Robert J. Ferullo, Ed.D.
George J. Goldin, Ph.D.

Associate Professor

Gerald A. Tuttle, Ph.D.

Assistant Professors

William M. Coan, Ph.D.
Louise LaFontaine, Ed.M.
Robert B. Redden, Ed.D.

Instructors

Arlis B. Aron, M.Ed.
Joseph Aurelia, M.Ed.
Kristine E. Strand, M.A.



The College of Education is devoted to the preparation of high quality professionals for service to education. We believe that professional competence is based upon carefully planned understanding and experience including:

- A general base of liberal studies with both breadth and depth.
- A base of understanding from the behavioral and social sciences.
- A base of understanding from a professional sequence.
- A series of observations and experiences that relate theory to practice.

Elementary Education preparation includes a concentration in one of the following areas of study: the humanities, social science, mathematics-science, reading-language, or special education. In addition, all students are required to complete a minimum of 16 quarter hours in two other subject areas.

Secondary Education preparation includes an academic major from the following fields: social studies, English, foreign languages, earth science, general science, biology, chemistry, physics, and mathematics.

Students in the College of Education are expected to participate in the five-year cooperative program. Opportunities are steadily increasing for selected students to receive assignments in cooperating school systems, social agencies, hospitals, or li-

Professional Preparation *Aims*

A View of the Five-Year Program



baries. In these settings students enjoy unique experiences which greatly enhance self-confidence and professional growth.

The College of Education offers a Pre-Professional Program in Speech and Hearing Therapy. This important professional area requires the completion of a master's degree for full certification. Students who complete the undergraduate program are prepared to enter graduate programs in Speech Therapy, Deaf Education, or Audiology.

Programs culminate in a quarter of supervised student teaching in the senior year. Students are assigned to a school within a 25-mile radius of Boston to ensure participation in the related seminar and receive adequate supervision. Those who successfully complete all requirements qualify for an initial professional teacher's certificate. This certificate is prerequisite for more specialized certification as guidance counselor, administrator, or special teacher.

Graduation Requirements *Degrees*

The College of Education will award the Bachelor of Science in Education to those who successfully complete their program of preparation.

Quantitative Requirements

Each program with the exception of Speech and Hearing requires not less than 173 quarter hours of credit including one quarter of supervised student teaching. At least sixteen quarter hours are required in each of the following areas: science and mathematics, the humanities, and social sciences.

The final three quarters preceding graduation must be completed in residence at Northeastern.

Qualitative Requirements

Students in the College of Education are expected to maintain an overall average of C. A minimum grade of C+ in the field of specialization and professional sequence is expected for recommendation for placement. Students are urged to rectify academic deficiencies at the earliest possible opportunity to prevent serious academic handicaps.

Graduation with Honor

Candidates who have attained superior grades in their academic work will be graduated with honor, high honor, or highest honor. To become eligible for honors at graduation, students must have attended Northeastern at least six quarters.

National Teacher Examination

Several states require NTE scores for certification, and a number of public school systems use NTE scores to evaluate applicants. Students are advised to obtain additional information from the office of the Dean of Education before deciding to write this examination.

Accreditation

The programs offered by the College of Education are accredited by the National Council for Accreditation of Teacher Education. The College is a member of the American Association of Colleges for Teacher Education.



**ELEMENTARY EDUCATION/SPEECH AND
HEARING THERAPY/ENGLISH/SOCIAL STUDIES/
MODERN LANGUAGES**

**Sample Freshman-Year
Program of Studies
in the Teaching of
Non-science Fields**

Mathematics or a modern language may be substituted for Political Science upon approval of the dean during orientation week.

First Quarter
Earth Science
English
Political Science
Social Science

Third Quarter
Western Civilization
English
Social Science Elective

Second Quarter
Earth Science
Western Civilization
Political Science
Social Science Elective

In addition to the above courses, a student may elect to take Basic ROTC.

**GENERAL SCIENCE/EARTH SCIENCES/
BIOLOGY/CHEMISTRY/PHYSICS/MATHEMATICS**

**Sample Freshman-Year
Program of Studies
in the Teaching of
Mathematics and Sciences
at the Secondary Level**

First Quarter
Basic Math or Calculus
Chemistry or Physics
Biology or English
Ed. Social Science

Third Quarter
Basic Math, Calculus, or Linear
Algebra
Chemistry or Physics
English
Ed. Social Science Elective

Second Quarter
Basic Math or Calculus
Chemistry or Physics
Biology or English
Ed. Social Science Elective

In addition to the above courses, a student may elect to take Basic ROTC.

Basic Course Requirements**A. Elementary Education:**

Students with a major in Elementary Education must follow an area concentration selected from the curricular areas of the humanities, social sciences, mathematics and science, language/reading, or special education. The student is encouraged to consult his adviser for the specific courses and the order in which they are taken for both their area-concentration and professional requirements. The elementary majors' freshman program in education will apply in meeting the following general and professional curricular requirements.

I. GENERAL REQUIREMENTS

Course Areas	Q.H.
A. Area Concentration	40
B. Humanities	16
1. Two literature electives (8 q.h.)	
2. One speech elective (4 q.h.)	
C. Social Sciences	16
1. Two history electives (8 q.h.)	
D. Mathematics and Science	16
**1. Two earth science courses (8 q.h.)	
2. Two natural history courses (8 q.h.)	
E. General Electives	16-32
4-8 depending upon area concentration	

II. PROFESSIONAL REQUIREMENTS

Course	Q.H.
**Education and Social Science	4
**Education Social Science electives (2)	8
Human Development and Learning I	4
Educational Psychology elective	4
Education Humanistic Foundation elective	4
Fundamentals of Arithmetic I and II	8
Analysis of Teaching and Educational Process	4
Elementary Education Compendium I and II	8
Fundamentals of Reading I and II	12
*Remedial Reading	4
*Linguistics and Reading	4
*Children's Literature	4
Introduction to Special Education	4
*Introduction to Speech and Hearing Therapy	4
*Learning Disabilities	4
*Psychology of Mental Retardation	4
*Emotionally Disturbed elective	4
*Introduction to Rehabilitation	4
Student Teaching and Seminar	8
Professional Development	1

B. Speech and Hearing Therapy:

Students in the Speech and Hearing Therapy Program may expect a dynamic curriculum—a curricular program that subscribes to guidelines and standards of the American Speech and Hearing Association. Thus the following general and professional requirements are offered in this pre-professional program. The student should consult with his academic adviser for the specifics on the courses to be taken and the order in which they are taken. The freshman program in education will apply in meeting the following requirements.

I. GENERAL REQUIREMENTS

Course Areas	Q.H.
A. Humanities	16
1. English: Freshman Writing and Introduction to Literature (8 q.h.)	
2. Electives (8 q.h.)	
B. Social Sciences	16
1. Psychology of Abnormal Behavior (4 q.h.)	
2. Psychology of Personality (8 q.h.)	
3. Electives (4 q.h.)	
C. Mathematics and Science	16
1. Electives (16 q.h.)	
D. General Electives	36

Course	Q.H.	II. PROFESSIONAL REQUIREMENTS
**Education and Social Science	4	
**Education and Social Science electives (2)	8	
Human Development and Learning I	4	
Educational Psychology elective	4	
Education Humanistic Foundations elective	4	
**Introduction to Speech and Hearing	4	
Introduction to Special Education	4	
Speech Science	4	
Anatomy and Physiology of the Auditory Mechanism	4	
Anatomy and Physiology of the Vocal Mechanism	4	
Developmental Semantics and Syntax	4	
Measurement and Evaluation	4	
Developmental Phonology and Phonetics	4	
Introduction to Audiology	4	
Phonemic Disorders	4	
Fundamentals of Reading	4	
Diagnostic Techniques	4	
Orientation to Clinical Practice	4	
Clinical Practice	8	
Professional Development	1	

C. Secondary Education:

The programs for teaching at the junior or senior high school level include the following subject area majors:

Biology	General Science
Chemistry	Mathematics
Earth Science	Modern Languages
English	Physics
	Social Studies

Students are expected to complete the requirements for their major field of study in addition to courses taken in their freshman year. However, the student's freshman courses do apply in meeting the other course areas of the following general and professional requirements. The student should see his education academic adviser to obtain complete specification of the courses and their sequence for his general and professional course requirements.

Course Areas	Q.H.	I. GENERAL REQUIREMENTS
A. Major Subject area	40	
B. Humanities	16	
1. Two literature electives (8 q.h.)		
C. Social Sciences	16	
1. Two history electives (8 q.h.)		
D. Mathematics and Sciences	16	
E. General Electives	44-48	
11-12 courses		

Course	Q.H.	II. PROFESSIONAL REQUIREMENTS
**Education and Social Science	4	
Education Social Science electives (2)	8	
Human Development and Learning II	4	
Educational Psychology elective	4	
Education Humanistic Foundation elective	4	
Analysis of Teaching and the Educational Process	4	
Measurement and Evaluation	4	
*Writing and the Teaching of Writing	4	
Methods and Materials of Teaching	4-8	
# Teaching Reading in Secondary Schools	4	
Student Teaching and Seminar	8	
Professional Development	1	

*Area concentration electives
†For English majors only
For English and Social Studies majors only
**These courses are usually taken in the Freshman year.

College of Engineering

Melvin Mark, Sc.D., *Dean*

Donald H. MacKenzie, Ed.M., *Associate Dean*

George W. Hankinson, M.S., *Assistant Dean, Director of Graduate School*

Thomas E. Hulbert, M.S., *Assistant Dean*

Professional Preparation The College of Engineering prepares students to participate constructively in a technologically changing world, contributing to the accumulation and application of new knowledge as professional engineers. Fundamentals are emphasized to provide the future engineer with the basic technical knowledge that will enable him to practice in a variety of positions. At the same time study of the social sciences and humanities provides an opportunity to develop an awareness of the social, economic, political, aesthetic, and philosophical influences that are part of the context in which he will practice his profession.

Aims The concept of education as a continuing, lifelong process necessary for effective work in an environment of constantly new facts, ideas, and scientific principles underlies the complete structure of the engineering curriculum.

Engineering education is directed toward assisting students to:

1. Understand the scientific principles and knowledge of that particular branch of engineering chosen.
2. Comprehend and develop competence in the engineering method and its application.
3. Communicate effectively and succinctly the important results of any technical study both verbally and graphically.
4. Acquire the motivation for continuing professional growth.

Programs The College offers five-year cooperative programs in Civil, Mechanical, Electrical, Chemical, and Industrial Engineering leading to the degree of Bachelor of Science with specification according to the engineering department in which the student qualifies. The College also offers a General Engineering Program which leads to the awarding of an unspecified Bachelor of Science degree in which the student has the opportunity to design his curriculum with his career objectives in mind. The various curricula effectively prepare students to seek employment in industry or to continue their education in graduate schools. The College is operated on the Cooperative Plan.

Electrical Engineering—Power Systems Option In order to meet the needs of the rapidly expanding electric-power industry, Northeastern has a special program in Power Systems Engineering. This program is offered on the Cooperative Plan and results in a bachelor's and master's degree in six years. The subject matter is basically that of electrical engineering augmented by work in power systems analysis, computers in power systems,

nuclear plant considerations, power system planning, protection and stability, MHD and DC transmission.

This option is designed for engineers intending to work in the areas of improving our environment. Topics included at the undergraduate level are Water Supply, Treatment & Waste Water Disposal, Solid Waste Disposal and Air Pollution. The cooperative program, resulting in a bachelor's degree in civil engineering in five years, enables one to go immediately into professional practice in governmental agencies, industry or private consulting firms.

The College of Engineering also offers an eight-year curricula leading to the degree of Bachelor of Science in Electrical or Civil Engineering. Classes are held in the evening and occasionally on Saturday morning. Admission and course requirements are the same as for the degree under the Cooperative Plan. For further information consult the evening bulletin of the College of Engineering.

The undergraduate academic program begins with three quarters of full-time study. Course work during the first year builds the student's understanding of mathematics and the physical sciences and improves his ability to communicate ideas both verbally and graphically.

Since the first year of study is nearly identical for all students in the College, the choice of specialization may be changed at the end of the freshman year without loss. The freshman courses act as a foundation for upper-class studies which will develop basic understanding of concepts in the engineering sciences and introduce the student to the engineering method and its application. About four-fifths of the upper-class program is devoted to scientific and technological study, and about one-fifth to humanistic-social courses, with the aim of balancing the student's growing technical proficiency with a similar development of his appreciation of the non-technical aspects of society and culture.

Cooperative work in the branch of engineering chosen will begin upon completion of the freshman year and continue throughout the remaining upper-class years. The work assignments during this time will prove to be most valuable in helping to integrate the important elements of both an engineering and a liberal education. They will be instrumental in teaching the value of teamwork while, at the same time, helping the student to acquire insight into the problems of actual engineering practice.

The College awards the Bachelor of Science degree in Chemical, Civil, Electrical, Industrial and Mechanical Engineering as well as the Bachelor of Science degree without specification.

Candidates for the Bachelor of Science degree must complete all of the prescribed work of the curriculum in which they seek to qualify with no academic deficiencies. Students who undertake cooperative work assignments must meet the requirements of the Department of Cooperative Education before they become eligible for their degree.

No student transferring from another college or university is eligible to receive the Bachelor of Science degree until he has completed at least one academic year at Northeastern immediately preceding his graduation.

Civil Engineering— Environmental Option

Part-time Program Offered During Evening Hours

General Description of Programs

Graduation Requirements Degrees

Qualification for Degrees

Graduation with Honor

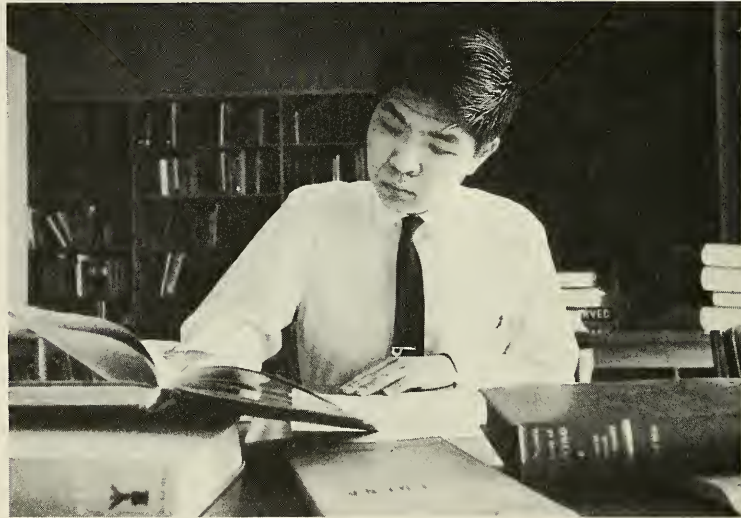
Candidates who have attained superior grades in their academic work will be graduated with honor. Upon special vote of the faculty, a limited number of this group may be graduated with high honor or with highest honor. Students must have been in attendance at the University at least six quarters before they may become eligible for honors at graduation.

Accreditation

All undergraduate day programs with specification in the College of Engineering are fully accredited by the Engineer's Council for Professional Development.

Women in Engineering

More women are entering the field of engineering each year, recognizing the opportunities present. Aware of their qualifications and potential, industry and government provide positions of responsibility for competent women engineers. Any woman with scientific or technical interests should consider the many possibilities offered in engineering.



The Sample Freshman-Year Program of Studies in the College of Engineering is the same for all majors in the College.

**Sample Freshman-Year
Program of Studies
in Engineering**

First Quarter
Basic Engineering
Calculus
Physics
English

Second Quarter
Basic Engineering
Calculus
Physics
General Chemistry

Third Quarter
Calculus
Physics
General Chemistry
English

The first-year pattern of two-term courses may vary according to assigned section.

In addition to the above courses a student may elect to take Basic ROTC.

**CHEMICAL
ENGINEERING
DEPARTMENT**

Ralph A. Troupe, Ph.D., *Professor and Chairman*

Associate Professors

Ralph A. Buonopane, Ph.D.
Bernard M. Goodwin, Sc.D.
Richard R. Stewart, Ph.D.
John A. Williams, Ph.D.

Instructors

John McCormick, B.S.
Thomas Regan, M.S.

FACULTY

Since the field of chemical engineering is so varied, the program of study has been designed to provide students with a broad training in which fundamental principles are stressed. This training will enable them to acclimate themselves readily to graduate school or to whatever industry they may choose.

The chemical engineer has been defined as a "professional man experienced in the design, construction, and operation of plants in which materials undergo chemical and physical change." It is the task of the chemical engineer to reduce the costs, increase the production, and improve the quality of the products in the industry.

Chemical engineering has grown out of the discoveries in the chemical laboratories which have served as a foundation for a great many new industries whose production processes involve chemical as well as physical changes.

Petroleum refining, plastics, manufacture of synthetic fibers, and hundreds of other industries require men and women trained in chemistry as well as in engineering. Moreover, much of the training received by the chemical engineer is now being applied to the rapidly developing fields of nuclear engineering, space engineering, and environmental controls. Many older industries, such as foods, textiles, paints and varnishes, and leather are also employing chemical engineers.

After one has taken the fundamental courses in chemistry, mathematics, and physics required of all engineering students, he will go on to advanced courses which apply these fundamentals to the solution of engineering problems. These upper-class courses are a skillful blend of the latest mathematical and theoretical analyses with the practical aspects of the profession.

Chemical Engineering is one of the fastest-growing major fields of engineering. Tremendous growth is occurring in research and development, especially in such fields as petroleum and chemicals. (About one-third of all chemical engineers are employed in these fields.)

**Professional Preparation
Aims**

Description of Major

A View of the Five-Year Major

Accreditation The Department is accredited by the American Institute of Chemical Engineers as well as by ECPD.

Laboratories The chemical engineering laboratories are designed to acquaint the student with the experimental approach to the solution of engineering problems and to develop research interests.

Experimental Methods Laboratories—The student is first taught the basic measurements in engineering with emphasis on temperatures, pressure, and flow rate. Following this, he is given problems in such areas as transport properties, kinetics, thermodynamics, and process dynamics, which he must solve experimentally. He is required to design the experiment, conduct it, reduce the data using computers, and write a final report. In the experiments he uses pilot scale chemical engineering equipment when applicable.

Research Laboratories—These are used by advanced undergraduates and graduate students to carry out research in the various areas of chemical engineering. Analytical laboratories and shop facilities are available to support these research projects.

The Nuclear Engineering Laboratory—This laboratory contains a subcritical-reactor purchased in part from funds supplied by the U.S. Atomic Energy Commission. The assembly is fueled with natural uranium and is water-moderated.

The installation also includes a reactor simulator which has the same type of instrument panel and gives the same responses and reactions as any critical reactor in the country.

The Sample Freshman-Year Program of Studies in the College of Engineering is the same for all majors in the College. See page 76.

Basic Course Requirements

I. GENERAL REQUIREMENTS

Course	Q.H.	Course	Q.H.
*English	8	**Physics	4
*General Chemistry	8	**Physics Lab.	2
*Basic Engineering	8	Math	8
*Calculus	12	Economics	8
*Physics	12	Liberal Arts	
**Calculus	8	Electives (4)	16

II. PROFESSIONAL REQUIREMENTS

Course	Q.H.	Course	Q.H.
**Organic Chemistry	8	Experimental Methods	8
**Mechanics	4	Chemical Engineering Thermo.	4
**Chemical Engineering Calculations	8	Chemical Engineering Kinetics	4
Chemical Engineering Physical Chemistry	8	Research Tech. Electives	12
Transport Phenomena	8	Technical Electives (4)	16

*These courses are usually taken in the Freshman year.

**These courses are usually taken in the Sophomore year.

CIVIL ENGINEERING
DEPARTMENT

Ernest L. Spencer, M.S., *Professor and Chairman*

Associate Professors

Leroy M. Cahoon, M.S.
John J. Cochrane, Ph.D.
Constantine J. Gregory, Ph.D.
Kenneth M. Leet, Sc.D.
Joseph H. Lenney, M.S.
Robert L. Meserve, M.S.
Saul Namyet, B.S.

Assistant Professors

Frederic C. Blanc, Ph.D.
Lyle E. Branagan, M.S.
Dennis R. Horn, M.S.
Rajinder K. Khetarpal, Ph.D.
Walter E. Jaworski, Sc.D.
James C. O'Shaughnessy,
Ph.D.
Paul J. Ossenbruggen, Ph.D
Richard J. Scranton, M.S.
Irvine W. Wei, Ph.D.
Gerald A. Woelfl, Ph.D.

FACULTY

Instructors

Frank P. Alberti, M.S.
Michael Kupferman, M.S.

The Department offers the opportunity for qualified young men and women to follow a course of study culminating in the degree of Bachelor of Science in Civil Engineering. The curriculum has been designed to permit a graduate to enter the engineering profession immediately, or to go on to graduate school in engineering or in some other field.

Professional Preparation
Aims

Civil Engineers, in assuming important roles in this Technological Age, apply scientific principles and practical judgment to the solution of many problems involving human welfare. In order to continue to make a significant contribution to society, the future civil engineer must have a solid background in the humanities, social sciences, and basic sciences in addition to his course work in analysis and design. Our program provides for this broad liberal education so that a graduate is not only properly prepared to make important contributions toward the solution of specific technical problems but also toward the solution of the more general problems of society such as transportation, water supply, waste water disposal, urban development, air pollution and solid waste disposal.

Description of Major

The Civil Engineering program emphasizes general engineering principles that may be applied in many specialized functions such as design, construction, manufacturing, research and development, and marketing. A close relationship is maintained with the profession so that the students are aware of job opportunities after graduation.

Since the first step in many civil engineering projects involves accurate measurement of the surface features of the land, of the nature of the soil, and of the character of the underlying rock,

A View of the Five-Year Major

the study of surveying, soil mechanics, and foundations occupies a large place in the civil engineering curriculum. And since the primary consideration in designing any structure is to make certain that it will withstand safely any force to which it may be subjected, the mechanics of static bodies, strength of materials, and theory of structures are studied in detail. The curriculum is thus intended to prepare the young civil engineer to take up the work of design and construction of structures, to solve the problems of water supply and waste disposal in urban areas, and to intelligently undertake supervision working in allied fields of engineering and in general contracting. There are 182 Q.H. required for graduation.

Upon graduation, the young engineer may expect a period of assistantship either in the field or in the office involving drafting, surveying, computation and design, construction layout and supervision, and obtaining and analyzing information for studies and reports. As experience is gained, the graduate is entrusted with greater responsibilities in actual design and supervision. Opportunities for employment exist at municipal, state, and Federal levels, in private consulting practice, in general contracting, and in industry. In many specialized areas, the young civil engineer may find that graduate work is a necessary adjunct for successful performance.

Part-Time Program The Civil Engineering Program is also available on a part-time basis. The classes are scheduled during the evening hours, usually two evenings per week. The curriculum can be completed in a minimum of eight years.

Four-Year Program The Department has available several programs that permit students to complete their academic requirements in four years. These programs are on a modified cooperative program or a combined cooperative program. Full details are available in the office of the department chairman.

Laboratories *Soils Laboratory*

The soils laboratory is well equipped to perform essentially all soils tests as well as model studies.

Equipment capabilities range from that required to perform the nominal soil classification tests to that necessary for sophisticated triaxial strength tests. The triaxial tests can be of strain-controlled loading, stress-controlled loading or a combination thereof. Cyclic loading tests to model earthquake loadings are also possible. Pore pressures measurements are made either electronically with pressure transducers or manually with null pressure indicators.

Consolidation test equipment of various load ranges and types is available. Consolidation tests applying loads up to 50 tsf on the sample are possible. In addition, the test may be conducted using back pressure technique to saturate the soil sampler.

Model studies can be conducted to study the seepage problems associated with earth dams, open braced cuts, etc. In addition, model studies on the bearing capacity of footings or piles are possible.

Hydraulics Laboratory

A laboratory primarily for demonstration purposes. Equipment consists of a Flume with a varying gradient, water quantity measuring devices such as Short Tube, Orifices, Weirs, Venturi Meter, and Reynolds Number. Research work can be conducted on many of the units.



Water Pollution Control Laboratory

Capabilities include analyses of both water and wastewater samples, in both physical, chemical and biological regimes. Laboratory and supporting equipment enable complete studies in the following areas; water analyses, wastewater analyses, stream and estuary studies, waste treatability studies, unit operations, bioassay techniques, pilot plant studies, tracer studies, and complete instrument analyses.

Instrument analyses capabilities include: atomic absorption, total carbon, organic carbon, specific ions, gas chromatography, spectrophotometric and gravimetric analyses.

Special areas are available for unit operation studies in water and wastewater treatment. A well-equipped machine shop has been established so that special equipment can be designed and built for model-prototype studies.

A new laboratory is under construction and will be equipped for research and development work in connection with the Ph.D. program in Environmental Engineering and Science.

Air Pollution Laboratory

Equipment is available to sample ambient air, gaseous and particulate pollutants, and for evaluation of the physical, chemical and biological characteristics of atmospheric pollutants. Continuous air samples may be established in any area in Metropolitan Boston and the samples analyzed by ultraviolet-visible, fluorescence and atomic spectrophotometry as well as gas chromatography and infra-red techniques. A portable carbon monoxide analyzer with print-out equipment is available for measurement studies and research work.

Recent additions in equipment make it possible to conduct studies in noise pollution.

*Soil Mechanics**Civil Engineering Materials:*

A temperature-controlled laboratory completely equipped to conduct all of the usual tests on bituminous materials and mixtures, Portland Cement and Concrete. Equipment is also available for testing structural models.

The laboratory is suitably equipped to conduct research in the above materials such as resistance to freezing and thawing, abrasion resistance, settling time and strength.

The Sample Freshman-Year Program of Studies in the College of Engineering is the same for all majors in the College. See page 76.

Basic Course Requirements**I. GENERAL REQUIREMENTS**

Course	Q.H.	Course	Q.H.
*English	8	**Physics	4
*Calculus	12	**Physics Lab.	2
*Basic Engineering	8	**Economics	8
*Physics	12	Math	8
*Chemistry	8	Public Speaking	2
**Calculus	8	Liberal Arts Electives (5)	20

II. PROFESSIONAL REQUIREMENTS

Course	Q.H.	Course	Q.H.
**Thermodynamics	4	A. Professional	
**Engineering Measurements	5	Electives—7 required	
**Structural Mechanics	12	Civil Engineering Systems	4
Dynamics	4	Structural	
Materials	4	Analysis I, II, III	12
Fluid Mechanics	4	Structural Design II	4
Electrical Engineering	4	Concrete Design II	4
Soil Mechanics (w. Lab.)	5	Hydraulic Engineering	4
Environmental Engineering	4	Engineering Geology	4
Concrete Design	4	Foundation Engineering	4
Structural Design	4	Transportation	
		Engineering	4
		Probability for	
		Civil Engineering	4
		Environmental	
		Engineering II	4
		Environmental	
		Engineering Lab.	4
		Environmental Chemistry	4
		Air Pollution	4
		Statistics	4
		Engineering Economy	4
		Construction Engineering	4

*These courses are usually taken in the Freshman year.

**These courses are usually taken in the Sophomore year.



ELECTRICAL ENGINEERING DEPARTMENT

Harold R. Raemer, Ph.D., *Professor and Chairman*

Professors

Sze-Hou Chang, Ph.D.
Basil L. Cochrun, M.S.
Bell A. Cogbill, M.S.
Ladislav Dolansky, Ph.D.
Welville B. Nowak, Ph.D.
Benjamin M. Rabinovici, Dr. Sc.
Wilfred J. Remillard, Ph.D.
J. Spencer Rochefort, M.S.
Martin Schetzen, Sc.D.
Walter C. Schwab, Ph.D.
Robert D. Stuart, Ph.D.

Associate Professors

Ralph E. Bach, Ph.D.
Marcello J. Carrabes, M.S.
James M. Feldman, Ph.D.
Kenneth I. Golden, Ph.D.
Robert A. Gonsalves, Ph.D.
Arvin Grabel, Sc.D.
Richard Grojean, M.S.
Wayne G. Kellner, Sc.D.
Walter H. Lob, M.S.
Morton Loewenthal, Ph.D.
Robert N. Martin, M.S.
Louis J. Nardone, M.S.
John G. Proakis, Ph.D.
Sheldon S. Sandler, Ph.D.

FACULTY

Assistant Professors

Martin E. Kaliski, Ph.D.
Francis D. McCarthy, Ph.D.
Robert E. Parkin, Ph.D.
Yash Pal Verma, Ph.D.

Electrical engineers have been primarily responsible for the development of the computer, the pacemaker, television, satellite communication, space navigation, and the means for providing the energy needed to light our cities and towns and to run our industries. At present, electrical engineers are also working to help find solutions to the problems of air pollution, transportation, and health care. These examples are just a small sample of the growing wealth of evidence which indicates that electrical engineering has impact on all facets of our society. As with all branches of technology, the societal functions and aims of electrical engineering are to maintain and improve the quality of life.

Despite the diversity of its application, electrical engineering may be conveniently divided into the two broad, general areas of *information sciences* and *energy resources*. The area of information sciences is concerned primarily with systems whose function is computation, communication, or control. Included in this area are the circuits and devices which comprise the systems and the application of the systems and engineering techniques to other disciplines. Energy resources deal with the problems related to the

Professional Preparation *Aims*

Description of Major

sources, generation, and distribution of large quantities of electrical energy. It should be noted, however, that no rigid boundary exists between the two areas and many of the technical specialties within electrical engineering are applicable to both areas.

Many electrical engineers are involved with the more traditional activities of system design and development, such as the information sciences or energy resources area. Other electrical engineers apply the knowledge gained in their professional education to such disciplines as ocean exploration, meteorology, experimental psychology, electronic music, health-care systems, bio-electronics, and educational devices for the disadvantaged.

The optimistic outlook for electrical engineering is based on the breadth of the technical activity described above. We constantly are reminded that among the pressing problems in our society are the "energy crisis," pollution, urban transportation, housing, health-care, and the plight of the socially and physically disadvantaged. No one has yet been able to forecast how these problems will be solved without the use of technological resources. Availability of electrical-energy, data processing, electronic instrumentation and control and communication are among the crucial resources needed.

A View of the Five-Year Major

The purpose of the curriculum is to provide the student with an education that has the breadth and depth necessary for professional practice. Breadth is needed so that the student is aware of all that electrical engineering encompasses and to provide the background necessary for self-study, a major criterion for professional success. Individual career objectives and initial professional achievement can result in part from learning a subject area in some depth. To achieve the balance between depth and breadth, the curriculum is divided into the *core program* and *elective courses*.

The core program includes those courses whose content is applicable to all specialties in electrical engineering. In addition, it provides the student with exposure to all areas in E.E. and a basic background for future learning. Subject areas covered in the core program are:

1. Circuits and Systems
2. Electronic Devices and Circuits
3. Digital Computer Design
4. Electromagnetic Theory
5. Electromechanical Dynamics (Energy Conversion)
6. Electrical Measurements (Laboratories)

The elective courses are designed to permit the student to develop his or her own interests. Many students use this part of the program to learn a particular subject in depth and also to better prepare for graduate studies. A broad range of courses are offered and include:

Digital Computer Techniques, Numerical Methods, Communication Systems, Control Systems, Advanced Electronics, Solid-state Devices, Power Systems, Wave Propagation and Distributed Circuits, Network Theory, and Mathematical Techniques in E.E.

In addition, students who wish to do individual projects or learn about a subject area not offered in an elective course may enroll in the senior project course. The student in this course works



with an interested faculty adviser on a one-to-one basis.

Seniors with high QPA's may supplement the elective course offerings with certain graduate courses offered by the Department. Good students who elect graduate courses may, as a result, shorten the time required for the master's degree.

Electrical engineering graduates of Northeastern have been accepted and performed well at all of the prestigious graduate schools. Those graduates who have entered industry find they compare favorably with graduates of other institutions and many have risen to positions of leadership in their professions.

Power Systems Engineering program in Electrical Engineering is a special option for those who wish to specialize in energy resources. This program is conducted in cooperation with the electric power companies in New England and other eastern states. The master's degree can be obtained in six years of cooperative education. For further information about this program students are advised to contact Dean Phillip R. McCabe, Admissions, 150 Richards Hall.

The four laboratory courses are an integral part of the educational process. Their purpose is to both supplement concepts developed in core courses and to introduce the student to design and experimental techniques.

In order to provide this facet of the educational experience, the department has laboratory equipment in excess of \$1.5 million. In addition to standard professional laboratory equipment, several specialized laboratory facilities are maintained. These include several small digital computers such as the PDP-8, an analog computer, a laser and optics laboratory, and a semiconductor devices laboratory in which students fabricate transistors and integrated circuits.

The Sample Freshman-Year Program of Studies in the College of Engineering is the same for all majors in the College. See page 76.

Course	Q.H.	Course	Q.H.
*Calculus	12	**Calculus	8
*Physics	12	**Physics Lab.	2
*General Chemistry	8	**L.A. Electives (2)	8
*English	8	Math Analysis	8
*Basic Engineering	8	L.A. Electives	20
**Physics	8		

Course	Q.H.	Course	Q.H.
**Circuits and Systems I & II	8	Material Science	4
Circuits and Systems III & IV	8	†Design and Organiz. of Digital Computers	4
Thermodynamics	4	or	
Mechanics	4	Technical Elective	4
Electrical Engineering Lab.	8	Electronics III	4
Electronics I & II	8	Electromechanical Dynamics	4
Field Theory I & II	8	Professional Development	0
		††Technical Electives (5)	20

Power Systems Engineering

Laboratories

Basic Course Requirements
I. GENERAL REQUIREMENTS

II. PROFESSIONAL REQUIREMENTS

*These courses are usually taken in the Freshman year.
**These courses are usually taken in the Sophomore year.
†This course must be taken to meet Graduation requirements.
††A total of 4 Technical Electives (16 Q.H.) is required for graduation.

The Electrical Engineering Department offers a wide variety of Technical Electives. These enable students to coordinate elective choices to satisfy their personal objectives of breadth or depth. To aid in selection, the elective courses are grouped by discipline.

Technical Electives

Electronic Circuits and Systems
 Selected Topics in Electronics
 Theory & Tech. of Semicond. Dev. I
 Theory & Tech. of Semicond. Dev. II
 Senior Project Labs
 Control Systems
 Communication Theory
 Math Techniques in E.E. I & II
 Numerical Methods & Computer Appl.
 Digital Techniques

Electromagnetic Theory
 Wave Transmission & Reception
 Advanced Topics in E & M
 Math Techniques in E.E. I & II
 Numerical Methods & Computer Appl.
 Theory & Tech. of Semicond. Devices I & II
 Senior Project Labs.

Computer Sciences
 Numerical Methods & Computer Appl.
 Digital Techniques
 Fundamentals of Computation Structures
 Intro. to Theory of Dig. Computation
 Communication Theory
 Control Systems
 Math Techniques in E.E. I & II
 Selected Topics in Electronics
 Senior Project Labs.

Systems Theory
 Control Systems
 Communication Theory
 Math Techniques in E.E. I & II
 Numerical Methods & Computer Appl.
 Digital Techniques
 Power Systems I & II
 Wave Transmission & Reception
 Senior Project Labs.

Power Systems Option
 Leading to
 B.S. Degree-5 years
 M.S. Degree-6 years

Basic Course Requirements
 I. GENERAL REQUIREMENTS

Course	Q.H.	Course	Q.H.
*Calculus	12	**Calculus	8
*Physics	12	**Physics Lab.	2
*General Chemistry	8	**L.A. Electives (2)	8
*English	8	Math Analysis	8
*Basic Engineering	8	L.A. Electives (6)	24
**Physics	8		

II. PROFESSIONAL
 REQUIREMENTS

Course	Q.H.	Course	Q.H.
**Circuits and Systems I & II	8	E.E. Power Lab.	4
Circuits and Systems III & IV	8	*Math. Methods in E.E.	4
Thermodynamics	8	Nuclear Engineering	4
Electrical Engineering Lab.	4	Design and Organiz. of Digital Computers	4
Electronics I & II	8	Engineers Econ.	4
Field Theory I & II	8	or	
Basic Power Circ.	2	Material Science	4
*Probability	2	or	
Electromechanical Dyn.	4	Environmental Eng.	4
Mechanics	4	*Linear Systems Anal.	4
Machines and Systems	4	*Anal. of Power Systems	4
Electric Power Systems	8	*Seminars (2)	4
Professional Development	0	*Power Systems Planning	4
		*Special Topics in Power	2
		*Grad. Electives	16

*These courses are usually taken in the Freshman year.

**These courses are usually taken in the Sophomore year.

*These are Graduate courses and are not needed for the B.S. degree.

GENERAL ENGINEERING PROGRAM

Arvin Grabel, Sc.D., *Electrical Engineering, Chairman*
Thomas E. Hulbert, M.S., *Asst. Dean of Engineering,*
Executive Secretary
Stewart Hoover, Ph.D., *Industrial Engineering*
Richard J. Murphy, Ph.D., *Mechanical Engineering*
Saul Namyet, B.S., *Civil Engineering*
Richard R. Stewart, Ph.D., *Chemical Engineering*

ADVISORY COMMITTEE FOR 1973-74

Engineering and technology influence all areas of endeavor and have a profound effect on the lifestyle and institutions of the society. The impact is both cultural and scientific and is manifested by the awareness that solutions to society's problems are in part technological. The major purpose of the General Engineering Program is to provide flexible, interdisciplinary educational opportunities based on fundamental engineering concepts. The interdisciplinary nature allows the student to develop other areas of interest in which an engineering background is professionally useful.

The program is designed for students whose interests are in engineering-related professions rather than in the traditional profession of engineering. It is expected that the work engaged in by graduates of this program will encompass the entire spectrum of professional activity. Typical areas include computers, urban technology, social systems, and health care.

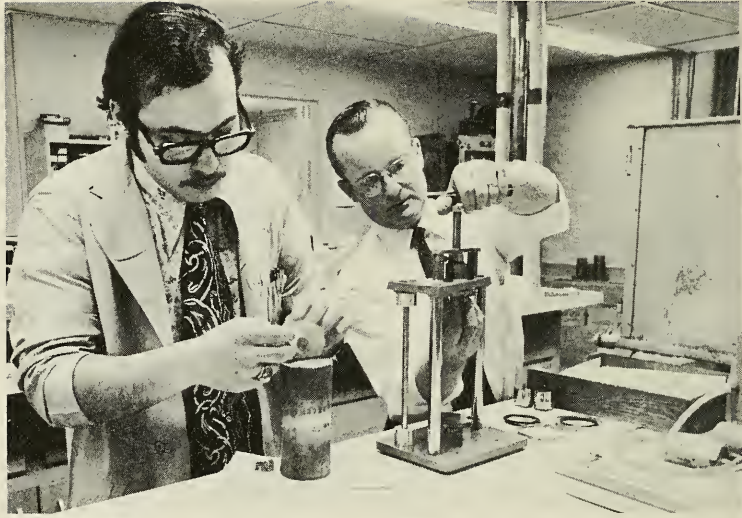
The General Engineering Program is highly elective and gives the student the opportunity to develop, in conjunction with his adviser, a program designed to meet his or her own career objectives. To achieve this goal, the student is exposed to the fundamental engineering areas of electric circuits, systems, mechanics, thermodynamics, and materials. These courses are based on basic principles developed in early courses in mathematics and physics.

As the computer is a basic tool in any technological environment, each student is required to learn the elements of computer programming.

Graduate education and continuing education are increasingly more important in professional life. By appropriately planning his program, the student will be able to satisfy the course requirements necessary for admission into all types of graduate and professional schools, including law, medicine, public health, social sciences, as well as engineering.

Professional Preparation Aims

Description of Major



A View of the Five-Year Major

Each student in the program is required to satisfy the following minimum requirements beyond the freshman year:

- 8 quarter hours in Mathematics
- 6 quarter hours in Physics (including laboratory)
- 4 quarter hours in Circuit Theory
- 4 quarter hours in Materials
- 4 quarter hours in Systems
- 4 quarter hours in Thermodynamics
- 16 quarter hours in Social Sciences (consisting of at least two sequences of two courses each from the areas of sociology, economics, political science, and psychology)
- 8 quarter hours in the Humanities (consisting of at least two courses from the areas of art, history, language and literature (not including grammar), music, philosophy, and drama (not including public speaking))

The remaining portion of the program is completely elective but must be designed to fit the student's career objective. At least 24 quarter hours of course work must be taken in the professional departments in the College of Engineering (Chemical, Civil, Electrical, Industrial, and Mechanical Engineering).

Beyond the freshman year, the students plan their programs in conjunction with a faculty adviser. Basically, the elective program permits each student to plan a distinctive and highly individualistic curriculum. In addition, several sample programs with concentrations in the areas of computers, urban technology, technology and social systems, and technology and health care have been developed.* These indicate part of the range of curriculum planning available to the student.

While each student is enrolled in a "different program", the goals of each are the same: the breadth of an engineering-based liberal education in combination with the development of professional skills.

* For further information regarding these sample programs, students are requested to contact Dean Thomas E. Hulbert, College of Engineering, 216, Hayden Hall.

**INDUSTRIAL
ENGINEERING
DEPARTMENT**

David R. Freeman, Ph.D., *Professor and Acting Chairman*

Professor

Austin W. Fisher, Jr., Sc.D.

Assistant Professors

Albert A. Marcotte, M.S.

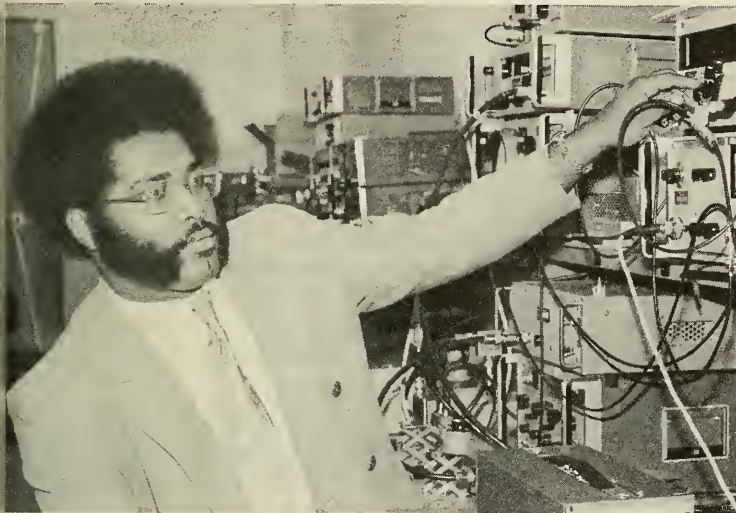
Jay K. Satia, Ph.D.

FACULTY

Associate Professors

Stewart V. Hoover, Ph.D.

Thomas E. Hulbert, M.S.



Industrial engineering is invaluable to management in its decision-making when management is faced with problems of the best utilization of men, material, equipment, and energy to achieve the aims of the organization. The organization may be an entire corporation, a hospital, a government office, an individual department, or any other group organized to make a product or perform a service.

The managers of an organization need factual information, arranged to define different alternatives and their consequences, to help them recognize and solve existing problems. Industrial engineering collects, analyzes, and arranges this information in such a way as to fulfill this need, and at the same time searches for better ways to do the job.

Increasing numbers of graduates have been employed in service industries such as the airlines, hospitals and banks. New courses recently introduced into the curriculum reflect the industrial engineer's interest in changing attitudes in society about computers, population growth, pollution and the quality of life.

**Professional Preparation
Aims**

Description of Major

Everyone knows what a kitchen is and what activities take place there. Let us draw the following comparisons between what the industrial engineer does and activities in the kitchen.

<i>Kitchen Activities</i>	<i>Industrial Engineering Activities</i>
1. Timing preparation of a meal	1. Production scheduling
2. Location of stove, sink, refrigerator, etc. in the kitchen	2. Facilities planning and plant layout
3. Moving hot and cold foods from kitchen to dining room and returning dirty dishes	3. Materials handling of production items
4. Arranging ingredients and cooking utensils for the preparation of a pie	4. Arranging a work place with proper tools and materials to perform an assembly easily—work design
5. Persuading the children to wash the dishes	5. Personnel relations
6. Checking the quality of job the children do at dish washing	6. Quality control of production items
7. Determining the quantity of can goods to stock in the pantry	7. Inventory control of goods

A View of the Five-Year Major

The extensive sequence in physics, mathematics, and engineering sciences in the program sharply differentiates an engineer's education from that of the student of business management.

The first two years will be devoted primarily to building a strong foundation through the study of mathematics, physics, English, chemistry, and the engineering sciences.

In the junior and senior years more advanced subjects will be included. Among these are statistics, probability, operations research, quality control, computer science, management information systems, and plant layout.

Special Information*Integrated Laboratory*

The new Industrial Engineering Laboratory is an integrated lab used for a variety of different courses. Directly associated with the lab classroom is the computer console room utilized in quite a variety of courses, the copying equipment for use in the plant layout courses and the machine tool lab for use in work design and manufacturing courses. Students work as individuals or in groups, depending upon the scope and complexity of the project. Extensive laboratory project work is also conducted in outside industrial plants and service organizations on actual problems. Students can view actual operations on occasional plant visits.

The Computer

Students are required to learn basic computer programming in their first year. In later years they are asked to solve complex problems by computer. The University Computation Center provides a service to the student whereby he can leave his program at the Computation Center, have an experienced computer expert run the program on a high-speed digital computer and, in a short

time, can pick up his results. The computer is of particular interest to the industrial engineer, since many complex problems such as assembly line balancing, mathematical modeling, and industrial simulations require a computer solution.

The Sample Freshman-Year Program of Studies in the College of Engineering is the same for all majors in the College. See page 76.

Basic Course Requirements			
I. GENERAL REQUIREMENTS			
Course	Q.H.	Course	Q.H.
*Calculus	12	**Physics	4
*Physics	12	**Physics Lab.	2
*General Chemistry	8	**Economics I & II	8
*English	8	†Math Elective	4
*Basic Engineering	8	Public Speaking	3
**Calculus	8	L.A. Electives	20
II. PROFESSIONAL REQUIREMENTS			
Course	Q.H.	Course	Q.H.
**Work Design	4	Personnel and Organizations	4
††**Engineering Science Elective	4	Senior Project	1
**Probability Analysis	4	Engineering Economy and Statistical Decision Theory	4
Statistics	4	Professional Development	0
Industrial Cost Control	4	††Engineering Science Electives (4)	16
Operations Research	8	†††Technical Electives (5)	20
Systems Analysis I	4		
Systems II (or other approved course)	4		

*These courses are usually taken in the Freshman year.
**These courses are usually taken in the Sophomore year.
†Differential Equations or suitable offering of Math Department with consent of the adviser.

††Five Engineering Science courses are required. They must include:

- Prin. of Computation and Programming I
- Strength of Materials B
- Electrical Engineering I

The remaining courses may be selected from:

- Prin. of Computation and Programming II
- Electrical Engineering II
- Mechanics II
- Flow of Fluids
- Thermodynamics I
- Materials Science

†††Five Technical Electives are required. Three must be Industrial Engineering Electives:

- Production Planning
- Plant Layout
- Quality Control
- Management Information Systems
- Digital Simulation
- World Dynamics
- Urban Dynamics
- Manufacturing Processes
- Independent Study

MECHANICAL ENGINEERING DEPARTMENT

Arthur R. Foster, M.Eng., *Professor and Chairman*

FACULTY

Professors

John F. Dunn, Sc.D.
Melvin Mark, Sc.D.
Welville B. Nowak, Ph.D.
Joseph J. Zelinski, Ph.D.

Associate Professors

Ralph S. Blanchard, M.S.
H. Frederick Bowman, Ph.D.
Bertram S. Long, M.E.
Ernest E. Mills, M.S.
Richard J. Murphy, Ph.D.
Warren G. Nelson, Sc.D.
Thomas E. Phalen, Jr., M.S.
John Rossettos, Ph.D.
Alvin J. Yorra, M.S.
John Zotos, Met.E.

Assistant Professors

Chang-Chi Chao, Ph.D.
William W. Chu, Ph.D.
John W. Cipolla, Jr., Ph.D.

Instructors

T. A. Balasubramaniam, M.S.
W. Peter Hansen, M.S.
Erwin Perl, M.S.
John Swanson, M.S.

Professional Preparation *Aims*

Mechanical Engineering is the branch of engineering which is broadly concerned with energy, including its transformation from one form to another, its transmission, and its utilization. Mechanical engineers conceive, plan, design, and direct the manufacture, distribution, and operation of a wide variety of devices, machines, and systems—including complex man-machine systems—for energy conversion, environmental control, materials processing, transportation, materials handling, and other purposes.

Mechanical engineers are engaged in all the engineering functions, including creative design, applied research, development, production, and management. The field of mechanical engineering is sufficiently broad in that it provides an excellent professional base for a wide flexibility of career choice and for interdisciplinary activities.

Description of Major

The curriculum is designed to accommodate the broadening demands on the mechanical engineer by first establishing a firm foundation in the basic sciences and then permitting the student the option of directing his studies toward a chosen area of interest.

A View of the Five-Year Major

In the first three years the student studies the basic sciences (mathematics, physics, and chemistry), the engineering sciences (mechanics, thermodynamics, fluid mechanics, and material science), and the humanities. As an upperclassman he can elect to concentrate his studies in the areas of thermofluid engineering, mechanics and design, or materials science and engineering.

Thermofluid engineering is concerned with the properties and characteristics of the working fluid of machines. For example, the ability of an aircraft to fly depends upon the manner in which air flows over its lifting surfaces. The engineer must understand the characteristics of fluid flow. The energy to run a turbine is extracted from the steam or combustion gases which pass through it and the engineer must have a knowledge of the concepts of thermodynamics; the efficiency of a cooling tower depends upon the mechanisms by which fluids transfer heat to surfaces and the engineer must have a firm grasp of the principles of heat transfer.

Mechanics and design are based upon the fundamental scientific and mathematical tools which are utilized in the analysis of mechanical configurations as they evolve in the design of machines and power-producing devices. For example, the engineer in the area of mechanics and design will analyze and design plate and shell components for nuclear power plants and deep-sea oceanographic vessels; he will develop new methods for evaluating filamentary composite structures; in the modern machine tool industry he will be concerned with computer control of machine tools; in the engine industry he will analyze stresses in such components as turbine blades. To prepare for this the upper-class student will elect such courses as Experimental Stress Analysis, Advanced Strength of Materials and Deformation of Solids, Vibrations, Numerical and Computer Methods in Engineering Analysis.

Materials science and engineering is concerned with relationships among the structure, composition, properties, and functions of materials and with control of the structure and composition to achieve desired properties. Only recently have engineers come to realize that an understanding of the principles of materials science enables them to design more creatively and with greater freedom than the traditional reference to handbooks. Examples of areas where mechanical engineers find materials properties a part of the basic design function are: manufacturing techniques, structures (vehicles, buildings), energy conversion, electronic devices (including computers), packaging, and prosthetic devices. For those mechanical engineers who desire further knowledge in the materials field, advanced courses are available.

For honor students an accelerated program is available. It allows completion of the requirements for both B.S. and M.S. degrees in five (5) years by overloads starting at the third year and students giving up their senior co-op term.



Five-Year B.S.—M.S. Program

Mechanical Engineering Laboratories

The laboratories in Mechanical Engineering contain equipment ranging from an electron microscope and ultrasonic measuring devices to pumps and weirs. Equipment is available in the thermofluids area such as a Rover turbine, Wankel engine, diesel engines, thermoelectric coolers and generators, subsonic and supersonic wind tunnels, to name a few. Material science has research microscopes, various furnaces, a fluid-to-fluid extrusion press, x-ray diffraction equipment, etc. For the mechanics and design areas, vibrations, experimental stress analysis and materials testing facilities are provided.

Special Information

Computers

Twenty amplifier analog computers as well as a time-sharing terminal give both digital and analog capacity to the laboratories.

The Sample Freshman-Year Program of Studies in the College of Engineering is the same for all majors in the College. See page 76.

Basic Course Requirements
I. GENERAL REQUIREMENTS

Course	Q.H.	Course	Q.H.
*English	8	**Physics	4
*General Chemistry	8	**Physics Lab.	2
*Basic Engineering	8	**Liberal Arts Electives (2)	8
*Calculus	12	Math. Analysis	8
*Physics	12	Liberal Arts Elective	4
**Calculus	8		

II. PROFESSIONAL
REQUIREMENTS

Course	Q.H.	Course	Q.H.
**Mechanics I & II	8	Measurement and Analysis	4
**Thermodynamics	4	Fluid Mechanics	4
Thermodynamics	4	Materials Science	4
Mechanics III	4		

Junior and Senior Years

There are twelve (12) courses to be selected by Juniors and Seniors in addition to four (4) Liberal Arts Electives. Nine (9) of them are subject to the following departmental restrictions:

I. Required Mechanical Engineering Courses (5 required)

A. Mechanics (2 required)

Choose one from each column (section)

Analytical Dynamics	Strength of Materials A
Mechanical Vibrations	Strength of Materials B
Systems Analysis	Mechanics of
and Control	Deformable Bodies

B. Thermodynamics

Heat Transfer (required)

C. Materials (1 required)

Mechanical Behavior of Materials
Material Processing

D. Design

Either M.E. Design (Design Fundamentals prerequisite)
or
Engineering Design

II. Additional Mechanical Engineering Courses (3 required)

III. Electrical Engineering Course (1 required)

*These courses are usually taken in the Freshman year.

**These courses are usually taken in the Sophomore year.

BIOPHYSICS AND BIOMEDICAL ENGINEERING OPTION

Samuel Fine, M.D., *Professor and Chairman*

Biophysics and biomedical engineering is concerned with the scientific principles underlying the physical and biological sciences and their application to problems of biological and medical significance.

Biophysicists and biomedical engineers are engaged in both theoretical and experimental studies, either as independent investigators or as members of a research or development group. They characterize and determine the mechanism of action of natural and synthetic macromolecules, analyze the properties of blood, and investigate the structure and function of organ systems such as the nervous system, the respiratory system, the cardiovascular system and the endocrine system. They design, develop, market and apply transducers, cardiac pacemakers and defibrillators, heart assist systems, artificial kidneys and limbs and diagnostic and therapeutic X-ray equipment.

There is no special curriculum in Biomedical Engineering. Several of the engineering disciplines in this catalog provide the engineer with a background in the physical sciences. The purpose of the Department of Biophysics and Biomedical Engineering is to assist the engineering student from his freshman through his senior year in choosing courses in the biological sciences to complement those in the physical sciences and humanities taken in the standard engineering curriculum.

Courses will be chosen without prejudicing the student's obtaining a degree in his field of engineering specialization. In some cases, courses in the biological sciences can be taken as additional course work during the student's career at the University. In other cases, courses in the biological sciences can be taken as electives in the standard engineering curriculum. The opportunity to take these courses is dependent on the student's interests, capabilities, and academic record. It is, of course, limited by schedule conflicts which may occur.

Students who wish to undertake a program in engineering which includes biological sciences must contact the Department of Biophysics and Biomedical Engineering on their arrival as freshmen at the University. This is important since biology is substituted in the first year for a portion of basic engineering.

Education in a program involving the physical and biological sciences provides a sound foundation for future studies toward a doctorate in medicine or dentistry, or toward a career in the biomedical engineering industry or as an engineer in a hospital or governmental agency such as the Department of Health, Education and Welfare. Industrial organizations are seeking individuals with a strong background in engineering supplemented by a biological science education. Other career opportunities include the marine sciences, the psychological sciences, and public health.

Professional Preparation

Aims



GRAPHIC SCIENCE DEPARTMENT

Wilfred P. Rule, M.S., *Professor and Chairman*

FACULTY

Associate Professors

Franklyn K. Brown, M.Ed.
Borah L. Kreimer, Ed.M.
Robert S. Lang, Ed.M.
Kenneth S. Woodard, B.S.

Assistant Professors

Robert G. Finkenaur, M.S.
Daniel H. Hornbarger, M.S.
Nonna Lehmkuhl, M.Ed.

Professional Preparation

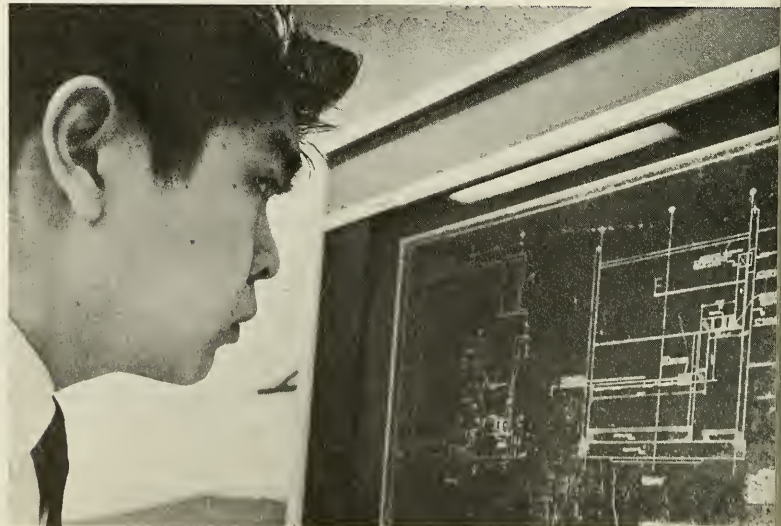
Aims

The Department of Graphic Science has two broad areas of responsibility. The first is providing freshmen engineering students with an initial involvement in engineering. The student is confronted with several problems similar to those he will encounter during his professional career. Methods of problem solving and graphical representation of solution are emphasized so that the student will learn some of the technical aspects of how engineers communicate through drawings and sketches. The role of an engineer as a creative designer is described by relatively large case studies that show the step-by-step solution to specially chosen problems that cut across several engineering disciplines.

In summary, the first responsibility of the Department is to provide a comprehensive view of what engineering is all about and prepare a student for his later courses and professional career.

The second major interest of the department lies in the area of computers. The department offers courses in FORTRAN, COBOL, SPSS and other languages to the entire University community. Each of these courses is heavily involved in applications to show the diverse ways in which the power of the computer can be brought to bear on problems in engineering, social sciences, the humanities, business, etc.

Where possible, the students are exercised in the use of large discipline-oriented software packages that provide comprehensive and sophisticated problem algorithms but require a minimum amount of original programming to use.



Lincoln College

William F. King, M.S., *Director, Associate Dean of Engineering*
Ernest E. Mills, M.S., *Coordinator for Mechanical Engineering Technology*

Louis J. Nardone, M.S., *Coordinator for Electrical Engineering Technology*

Lincoln College provides training in engineering technology. The programs of instruction prepare the graduate for activities closely allied to the field of engineering. Though they are concerned with the same general fields of engineering specialization, the programs are technological rather than professional in nature.

Emphasis is placed on the rational processes in converting theories and ideas into practical techniques, procedures, and products, thus preparing students to enter the technological world as active participants whose mission is, simply stated, to get things done. The engineering technologist works with the professional engineer, scientist, medical doctor, supervisor, and craftsman in converting scientific knowledge and craftsmanship into products and techniques. Fundamentals are related to current practice, providing a supportive "why" for the practical "how". At the same time, study of the humanities and social sciences gives an opportunity for students to develop an awareness of the social, economic, and political influences that are part of the real world.

The structure of the Engineering Technology curriculum is based upon the dual need for relevant technical skills and the foundation for future growth. Engineering technology education can assist students to:

1. Understand the scientific principles that govern the current technology of the particular branch of engineering which they select.
2. Develop competence in the application of technology to problem-solving.
3. Communicate effectively the important implications of technological advancements.
4. Acquire the motivation for continued relevance in technical skills.

Lincoln College offers five-year cooperative programs in Mechanical and Electrical Engineering Technology leading to the degree of Bachelor of Engineering Technology with specification according to the curriculum in which the student qualifies. The curricula effectively prepare students for employment in industry.

Since the first year of study is identical for all technology students, a firm choice of major may be delayed until spring. At this time, the choice of cooperative work assignments makes a deci-

Professional Preparation Aims

A View of the Five-Year Program

sion mandatory. Freshman courses act as a foundation for upper-class studies which will develop a basic understanding of concepts in the technical application of the sciences. They will also introduce the student to the current technical hardware and its applications. About four-fifths of the upper-class program is devoted to scientific and technological study, and about one-fifth to humanistic-social courses, with the aim of balancing technical proficiency with an appreciation for the non-technical aspects of society and culture. Cooperative work assignments during the upper-class years are most valuable in helping integrate for students the important elements of both a technical and a liberal education.

*Part-Time Program Offered
During Evening Hours*

Lincoln College also offers eight-year curricula leading to the degree of Bachelor of Engineering Technology in the following areas:

- Civil Engineering
- Mechanical-Structural Engineering
- Electrical Engineering
- Environmental Control Engineering

Classes are held in the evenings and Saturday mornings. Admission and course requirements are the same as for the degree under the Cooperative Plan.

Graduation Requirements

Candidates for the Bachelor of Engineering Technology degree must complete all of the prescribed work of the curriculum in which they seek to qualify. A total of approximately 180 quarter hours is required for the degree. Students who undertake the Cooperative Education Program must meet the requirements of the Department of Cooperative Education before they become eligible for their degrees.

No student transferring from another college or university is eligible to receive the degree until he has completed at least one academic year at Northeastern immediately preceding his graduation.

Graduation with Honor

Candidates who have attained superior grades in their academic work will be graduated with honor. Upon special vote of the faculty, a limited number of this group may be graduated with high honor or with highest honor. Students must have been in attendance at the University at least six quarters before they may become eligible for honors at graduation.

Facilities
Laboratories

Electrical Engineering Laboratories

The Northeastern electrical engineering laboratories are patterned after a composite of typical industrial research and development laboratories. Boasting a wide variety of modern testing and measuring equipment, the laboratories are an excellent adjunct to the classroom. Here the student may simulate or fabricate devices or systems which have been studied in his lecture courses.

From light machinery and power equipment to microwave precision systems, students plan and pursue their projects in the laboratory. The recent acquisition of the digitally programmed analog computer also permits the study of larger or more complex systems than can be realized in the laboratory itself. Two PDP8I Digi-

tal Equipment Computers are available in the laboratories for applications with the analog machines or other laboratory experimentation.

Mechanical Engineering Laboratories

The Mechanical Engineering Department includes the following laboratories:

Materials and Metallurgy Laboratories—Equipped to treat the physical examination of materials and their structures. The equipment includes modern apparatus for vacuum melting technology, X-ray diffraction, and thermal expansion studies, two research metallographs, an electron microscope, and fluid-to-fluid extrusion press.

Fluid and Gas Dynamics Laboratory—Designed to study aerodynamic and hydrodynamic phenomena such as vortices, separation streamlines, and shock waves. Equipment includes an aerodynamic, an axial flow fan, shock tube, subsonic wind tunnel, and a supersonic wind tunnel.

Materials Testing and Stress Analysis Laboratories—Equipped to handle both the destructive and non-destructive testing of materials, this laboratory has a 300,000-lb. Universal testing machine provided with an automatic electronic stress-strain recorder and a high-temperature tensile test furnace.

Stresses and strains may be determined experimentally by the use of strain gage, photoelastic, photostress, and brittle lacquer techniques.

Recent additions include a fatigue testing machine of 2,000-lb. capacity, and vibration-testing units.

Heat Engineering Laboratories—Include a refrigeration unit which may also operate as a heat pump; two solid injection diesel engines provided with a continuous oxygen analyzer, one equipped with a strain gage torque meter; a CFR fuels research engine equipped with a strain gage pressure transducer; a 60-h.p. Rover gas turbine with automatic controls and Froude dynamometer; apparatus for study of stem-to-water heat transfer, comparison of film versus dropwise condensation, heat transfer to a boiling liquid, and thermocouple recovery factor; a thermoelectric generator to study the direct conversion of heat into electrical energy; a thermoelectric-refrigeration test facility for development of single and multistage thermoelectric coolers; and a Curtis steam turbine and condenser.

Automatic Control Laboratory—Includes a feedback control system and analog computers for simulation of engineering problems, fluid power testing units.

The Northeastern University Computation Center is a support arm to the many computer-oriented curricula of the various departments throughout the University. The facility has recently been updated with the installation of a powerful Control Data 6000 series system with time-sharing capability. The Center is used by the students in both the Electrical Engineering Technology and Mechanical Engineering Technology programs as the prime computation center as required by the curricula.



Computation Center



Aviation Technology

Lincoln College also offers on a full-time basis a program in Aviation Technology leading to the Associate Degree. This program operates out of the Norwood Municipal Airport in cooperation with Wiggins Airways, Inc. Students having a strong interest in flying as an integral part of their careers should contact the Director of the College.

Women in Engineering Technology

Many women enter the technology field each year. Both government and industry provide positions of responsibility for women technologists. Any young woman with technical or scientific interests should consider engineering technology as a career.

The Sample Freshman-Year Program of Studies in Lincoln College is the same for all majors in the College.

Sample Freshman-Year Program of Studies In Engineering

First Quarter

Algebra and Trig. I
Physics I
English/Writing
Engineering Design Graphics I
Prin. Computer Programming I

Third Quarter

Calculus I
Physics III
English/Literature
Engineering Design Graphics III
Prin. Computer Programming III
Physics Lab. II

Second Quarter

Algebra and Trig. II
Physics II
English/Literature
Engineering Design Graphics II
Prin. Computer Programming II
Physics Lab. I

In addition to the above courses a student may elect to take Basic ROTC

ELECTRICAL ENGINEERING TECHNOLOGY

Harold R. Raemer, Ph.D., *Professor and Chairman of the Electrical Engineering Department*

This area is taught by the faculty of the Electrical Engineering Department.

Since the BET program has been designed to provide trained people for ready assimilation by the engineering field, its main thrust is not aimed at preparing the student for direct admission to the graduate schools of engineering.

However, the BET program can be an avenue to gain admission to the engineering graduate programs for the exceptional student who includes additional undergraduate course work in engineering in his program. In most cases graduates of this program will be eligible for programs such as business, law, and education.

Electrical engineering technology deals with the design and operation of equipment and systems related to power, communications, data processing, and electrical control. Its major functions are:

1. The generation, transmission, and distribution of electrical energy for light and power purposes.
2. The development and production of equipment for telephone, radio, television, radar and communication.
3. The design and construction of data-processing systems and analog or digital computers.
4. The application of electrical and electronic devices in the control of processes and manufacture.

Since electrical engineering technology derives many of its fundamentals from developments in the pure sciences, the program of study begins with basic courses in mathematics and physics. In addition, the freshman year includes literature and engineering graphics to aid in developing the student's self-expression.

In the upper-class years courses are divided into five related sequences: circuits and systems, including feedback control; electromagnetic field theory and microwave devices; energy conversion, emphasizing electromagnetic devices; and laboratory work associated with all of the foregoing. Current practice is stressed.

In the senior year electives are offered in order that students may have the experience of depth and specialization.

The Sample Freshman-Year Program of Studies in Lincoln College is the same for all majors in the College. See page 100.

Professional Preparation Aims

Description of Major

A View of the Five-Year Major

Basic Course Requirements

I. GENERAL REQUIREMENTS

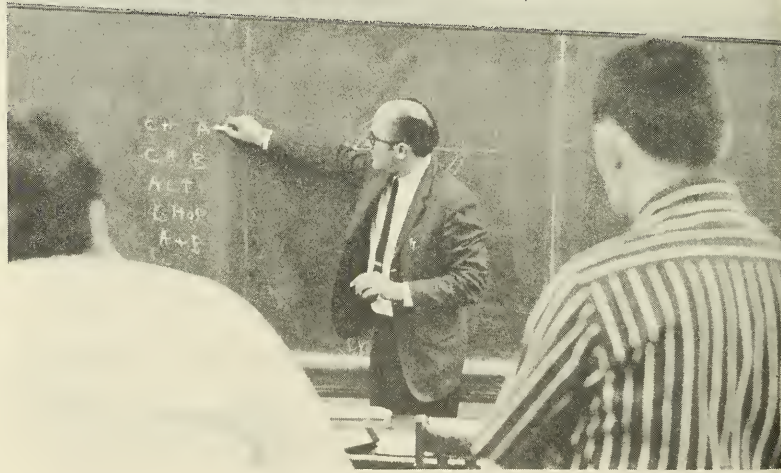
Course	Q.H.	Course	Q.H.
*Algebra and Trigonometry I & II	8	*Principles of Computer Programming I, II, III	12
*Calculus I	4	*Physics I, II, III	12
**Calculus A & B	8	*Physics IV	4
*English	12	*Physics Lab. I & II	2
Principles of Economics	4	**Liberal Arts Electives	8
*Engineering Design Graphics I, II, III	12	Liberal Arts Electives	12
		Technical Electives	16

II. PROFESSIONAL REQUIREMENTS

Course	Q.H.	Course	Q.H.
**Circuit Analysis I & II	8	Digital Computers	4
Circuit Analysis III & IV	8	Distributed Systems	4
**Physical Electronics	4	*Electrical	
Electronics I, II, III	12	Engineering Lab. I	2
Control Engineering I & II	8	Electrical	
Engineering Analysis I & II	8	Engineering Lab. II, III, IV, V, VI	10
Energy Conversion	4		
Electrical Measurements	4		

*These courses are usually taken in the Freshman year.

**These courses are usually taken in the Sophomore year.



MECHANICAL ENGINEERING TECHNOLOGY

Arthur J. Foster, M.Eng., *Professor and Chairman of the Mechanical Engineering Department*

FACULTY

Professors

John F. Dunn, Sc.D.
Joseph J. Zelinski, Ph.D.

Instructors

T. A. Balasubramaniam, M.S.
S. Y. Tsai, M.S.

Associate Professors

Bertram S. Long, M.E.
Ernest E. Mills, M.S.
Thomas Phalen, M.S.

They are the same as listed for the Electrical Engineering Technology program.

Mechanical engineering technology deals with the harnessing of power resources by means of machinery to perform useful work. In contrast to civil engineering, which deals primarily with static forces and structures, mechanical engineering is more concerned with the motion and kinetics of devices which are activated by hydraulic, electrical, mechanical, or thermodynamic forces. Major functions of the mechanical engineering technologist are:

- 1. Design and installation of all kinds of machinery, from pocket watches to the largest steel boring mills.
- 2. Development and production of engines and transport equipment (automobile, aircraft, ship, railway, etc.).
- 3. Construction and operation of furnaces and boilers, as well as heating and air-conditioning equipment, for the control of atmospheric and environmental conditions.

Since machinery is predominantly the concern of the mechanical engineer, the program of study is designed to give considerable training in the principles underlying the design and operation of engines, power transmission devices, machine tools, and other machinery. This, of course, implies a thorough study of the physical laws concerning motion and transfer of energy. Applied mechanics, thermodynamics, and study of materials will occupy prominent places in the program.

These studies will thus provide a student with a broad foundation in those fundamental subjects essential to the understanding of current practice. In the junior and senior years a student will have considerable elective choice and opportunity for specialization.

The Sample Freshman-Year Program of Studies in Lincoln College is the same for all majors in the College. See page 100.

Course	Q.H.	Course	Q.H.
*Algebra and Trigonometry I & II	8	*Physics Lab. I & II	2
*Calculus I	4	*Engineering Design Graphics I, II, III	12
*Calculus A, B	8	*Prin. Computer Programming I, II, III	12
*English	12	Liberal Arts Electives	20
Principles of Economics	4	Technical Electives	20
*Physics I, II, III	12		

Course	Q.H.	Course	Q.H.
*Mechanics A, B	8	Mechanical Design	6
*Mechanics C	4	Thermodynamics A, B, C, D	14
*Stress Analysis A	4	Fluid Mechanics A & B	6
Stress Analysis B	4	Nuclear Technology	4
*Materials	4	Mechanical Laboratory	6
Engineering Design	4	Heat Laboratory	4
Electricity and Electronics	4	Project Laboratory	4

*These courses are usually taken in the Freshman year.
*These courses are usually taken in the Sophomore year.

Professional Preparation
Aims

Description of Major

A View of the Five-Year Major



Basic Course Requirements
I. GENERAL REQUIREMENTS

II. PROFESSIONAL REQUIREMENTS

College of Liberal Arts

Robert A. Shepard, Ph.D., *Dean*

Ruth H. Karp, M.A., *Associate Dean*

Robert H. Ketchum, Ph.D., *Associate Dean, Director of Graduate School (Arts and Sciences)*

Professional Preparation *Aims*

Programs in the College of Liberal Arts are aimed at developing intellectual maturity. The mature person is aware of the significant phenomena of the world and has the ability to cope with them effectively and creatively.

To help the student understand the conditions of man's existence, the College of Liberal Arts offers the study of ideas and experiences in a variety of subjects and disciplines. To prepare him to play an effective role in the world, a departmental or individually designed curriculum helps him to master the concepts and methods of a specific discipline. Detailed study of an academic field is essential to liberal education, for through specialization one can acquire insight into the intellectual processes which form the basis of all knowledge. Broader study is equally necessary to gain perspective about oneself as an individual and about the relevance of one's knowledge to society.

Northeastern University's Cooperative Plan contributes to a liberal education by providing valuable opportunities for the student to test and extend his understanding of the complex world and perhaps of his special field through direct experience and practical application.

At best, however, the brevity of his own undergraduate experience and the vastness of human experience permit the student only to start his education. Education is an unending process because man's understanding of the world continually changes and grows. Consequently, the most enduring contribution a college of liberal arts can make is to help the individual acquire the skill and motivation to continue his intellectual development throughout his life.

A View of the Four- and Five-Year Programs

To enable each student to plan a college program in keeping with his own interests and aptitudes, a wide range of courses is offered. This does not mean that students elect courses indiscriminately. A definite series of basic courses in each curriculum is recommended by the faculty. Each student is guided in his selection of courses by a faculty adviser. During the sophomore year, each student tentatively selects a major field of specialization and thereafter, unless he changes his major, becomes closely identified with that field, with its faculty, and with other students in the same major.

All students in the College of Liberal Arts are eligible to participate in the Cooperative Plan which provides gainful employment or experiential assignments. In all Liberal Arts majors, students may exercise a choice between the five-year Cooperative Plan and a four-year full-time program.

The College of Liberal Arts admits students into two broad areas of study:

1. social sciences / humanities
2. sciences / mathematics

Since the freshman-year program is different in each of these areas, entrance requirements also vary.

All degree candidates must complete two quarters of Freshman English. In addition, candidates for the Bachelor of Arts degree must have completed at least 40 quarter hours (10 courses) of credit in courses outside the area of concentration and a language proficiency requirement described below. At least 16 quarter hours (4 courses) must be in each of the two other areas: e.g., 6 quarter hours (4 courses) in one and 24 quarter hours (6 courses) in the other, or 20 quarter hours (5 courses) in each, from the areas listed below:

Humanities

Art, Drama, Literature, Modern Languages (all courses except those elementary courses which are used to satisfy the language requirement), Music, Philosophy, Journalism, Speech.

Social Sciences

Economics, History, Political Science, Psychology, Sociology, Anthropology.

Science and Mathematics

Biology, Chemistry, Mathematics, Earth Sciences, Physics, Psychology (laboratory courses only). Note: A Psychology course may be used to meet only one distribution area.

A candidate for the B.A. must have attained the degree of proficiency in a language other than his mother tongue indicated by passing an intermediate-level college course or by meeting a comparable criterion. This requirement will be regarded as satisfied for students who earned an average grade of C or better in a full four-year language sequence in secondary school and for students for whom English is a foreign language. Other students may satisfy the requirement by passing a proficiency examination. Students who have not met the requirement at matriculation will ordinarily take an intermediate-level course in the language presented for admission, but those with exceptionally weak preparation may be placed in a lower-level course for a quarter. Alternatively, a student may satisfy this requirement with two years (four quarters) of a new language.

A student may petition the Dean of the College to meet the requirements of the B.A. degree without a departmental major: i.e., with an independent major. The petition must include a proposed program which the student intends to follow. Based on the rationale of his petition, he will be assigned to one or more faculty advisers willing to serve as his academic "home base."

Required courses in departmental majors leading to the Bachelor of Arts and Bachelor of Science degrees are outlined on the following pages. Upon petition to the faculty, substitutions may

Self-planned Program

be permitted in exceptional cases when required by the specific professional or vocational objectives of the student.

Requirements for an independent major and programs leading to either degree should be discussed in advance with a counselor in the Dean's office.

During the last year students in all curricula may take Placement Techniques, a course designed to prepare them for placement in specific positions in their chosen vocational or professional field. Under expert guidance each student prepares a complete personnel record, studies himself or herself and the opportunities that are open, and works out a complete campaign for obtaining after-graduation employment.

Students who undertake the Cooperative Education Program must meet the requirements of the Department of Cooperative Education before they become eligible for their degrees.

Preprofessional Advising *Premedical*

A student aiming to prepare for a career in medicine, osteopathy, veterinary medicine, dentistry or other related areas should arrange a brief interview with the Premedical Advisory Committee in the Department of Graduate Placement Services, 132 United Realty Building, as soon as possible after deciding on his goal in order to learn about the minimal curricular requirements for admission to professional schools, and the scheduling of the required Medical College Admissions, Dental Aptitude or other tests. These tests should be taken more than a year before the anticipated admission date.

Combined Program with Professional Schools

Students who have completed at least three-quarters of the work required for the baccalaureate degree at Northeastern University before entering an approved professional school of medicine, osteopathy, veterinary medicine, or dentistry will be granted the Bachelor of Arts or Bachelor of Science degree at the end of the second year in professional school, provided at least two-thirds of the work for the baccalaureate degree has been earned in residence at Northeastern and all other graduation requirements have been fulfilled. The residence requirement at Northeastern University must have been completed immediately prior to entrance into the professional school. Under this plan preprofessional students may reduce by one year the time ordinarily required for obtaining both degrees.

Prelegal

A student preparing for a career in law should arrange a brief interview with the Prelegal Advisory Committee in the Department of Graduate Placement Services, 132 United Realty Building, as soon as he decides on this goal in order to learn about curricular requirements for admissions to schools of law, and the scheduling of the required Law School Admission Tests and the best times to take them.

Note

A student aiming for admission to a school which provides training in a medical profession or the law may meet admissions requirements through a wide choice of majors if he includes the minimal number of courses required by the particular professional school. If at all uncertain about the appropriate major to select, such students should discuss program requirements with a preprofes-



sional adviser in the Department of Graduate Placement Services, 132 United Realty Building, and a counselor in the Dean's office.

The College of Liberal Arts awards the Bachelor of Arts degree to qualified candidates who have completed one of the curricula outlined on the following pages.

The College of Liberal Arts offers the Bachelor of Science degree to candidates who formally declare their intention of meeting the program requirements for this degree.

A candidate for either degree must complete eleven academic quarters with a full course load (normally about 16 quarter hours) in each quarter. In a maximum of three quarters, he may be permitted to carry a load that is lighter by one course (normally about 2 quarter hours). Individual variations may be possible, but must be approved in advance by the Dean's office.

If credit for work elsewhere is transferred to Northeastern, the quantitative requirement will be reduced at the rate of one term or each sixteen quarter hours of transferred credit. However, either the last three full quarters (twelve courses) or at least 75 percent of the credit for the degree must be taken at Northeastern.

An average grade of C is required for graduation.

Candidates who have attained superior grades in their academic work will be graduated with honor. Upon special vote of the faculty a limited number of this group may be graduated with high honor or with highest honor. Students must have been in attendance at the University at least six quarters before they may become eligible for honors at graduation.

All programs in the College of Liberal Arts are fully accredited by the New England Association of Schools and Colleges.

Freshman-Sophomore

Each year a limited number of freshmen are invited to participate in the Honors Program of the College of Liberal Arts. Selection is based on academic promise and demonstrated ability to do work of consistently high quality.

Freshmen chosen for honors are free to enter any course for which they are qualified. They meet the requirement for Freshman

Graduation Requirements
Degrees

Graduation with Honor

Accreditation

Other Programs
Honors Programs

English in two courses especially designed to encourage creativity.

A key feature of the program, which also extends to sophomores with exceptional records, is the opportunity to select an interdisciplinary colloquium (seminar) during one quarter. Each year the colloquia address a new range of topics. Recent subjects have focused on such diverse subjects as "Religion, Philosophy, and the Issues of a Counter-culture," "Races and Individuals: a Biological Approach," "The Problem of Slavery in America," and "Approaches to the Self."

Colloquia are limited in size and are open to both freshman and sophomore honor students. These special courses afford an opportunity to work closely with different kinds of students as well as with some of the finest and most stimulating faculty in the College.

Junior-Senior

Juniors and seniors with superior accomplishments in their majors and a high overall average may be invited to do honors work during their last three quarters. Individual departments design their own honors programs which may call for students participating in honors seminars, undertaking independent study, or carrying on a special research project culminating in an honors thesis. Whatever the specific departmental requirements may be, the honors student will be encouraged to develop his own talents and interests, and he will receive careful individual supervision.

The College of Liberal Arts has established these standards for honors work eligibility: a candidate must have a minimum average of 3.0 through the seventh quarter of his college work; he must have no F's or I's, no C's or D's in his major field, and no D's in courses required for graduation outside his major field. Sometimes, with the approval of the major department and the Honors Committee, exceptions can be made. The Honors Committee will invite all eligible students to apply for the program and will review applications from students normally not eligible but asking for special consideration.

The Honors Committee and the candidate's major department will, of course, insist that the work for honors remain consistently excellent. Should a student fall below standard, his program will be subject to review.

Departmental honors are awarded at graduation to students who successfully complete three quarters of honors work.

Exchange Program

Cooperative Work-Study Abroad

The College of Liberal Arts has recently inaugurated a cooperative work-study exchange program with the École Supérieure de Physique et Chimie in Paris. A number of qualified upper-class students are selected to spend a summer of intensive language study at Besançon followed by four months of work in a French industrial firm in the Paris region. The tuition cost of the language study (about \$250) is borne by the student, as are the living expenses at Besançon and Paris. These expenses are defrayed in part by job earnings and lower rates for food, travel, and entertainment available to students. The program terminates in time for the students to return for the spring quarter. For further details, contact the office of the Dean, 404 Hayden Hall.

All students in the College of Liberal Arts have the opportunity to choose courses from the following list of subjects:

American History	Music
Art	Philosophy
Biology	Political Science
Economics	Psychology
English	Russian
Foundations of Black Culture	Science and Black Society
French	Spanish
Geography	Sociology
Geology	Theatre
German	Western Civilization
Italian	

In addition, separate courses, differing in approach, are available in each of the following subjects; one approach is appropriate for science-oriented students, one for social science- and humanities-oriented students.

Chemistry
Mathematics
Physics

A freshman program will consist of either five or six subjects, depending on a student's intended major. He will take four subjects each quarter. An example of a six-subject program is shown below.*

First Quarter
Political Science
Spanish
Art
Geology

Third Quarter
English
Geology
Sociology
Political Science

**Sample Freshman-Year
Program of Studies in the
College of Liberal Arts**

Second Quarter
Art
Spanish
English
Sociology

The above is only one of many possible combinations of courses in the freshman year. Such a program might be geared to majors in Afro-American Studies, Art, Drama, Economics, English, History, Journalism, Modern Languages, Philosophy, Political Science, Psychology, and Sociology and Anthropology.
A sample program that might apply to majors in Biology, Chemistry, Geology, Mathematics, and Physics follows:*

First Quarter
Calculus I
General Chemistry
English
German

Third Quarter
Calculus III
Analytical Chemistry
English
Elective

Second Quarter
Calculus II
Physics
General Chemistry
German

*In addition to the above courses, a student may elect to take ROTC.

AFRO-AMERICAN STUDIES DEPARTMENT

Ramona H. Edelin, M.A., *Assistant Professor and Chairman*

Professional Preparation

Aims

Liberal Arts education in America generally, and at Northeastern University particularly, has long had the dual goal of providing for its students both an enhanced appreciation of their cultural heritage and the intellectual foundation for rewarding careers. Consistent with these goals, and appropriate to Northeastern University's avowed concern for the local community, the program of Afro-American Studies has as its central themes: 1) the cultural heritage and the societal problems peculiar to Americans of African descent, and 2) the preparation of black Americans for rewarding careers by supplementing traditional career-oriented courses in other programs with new courses that focus on career development specifically for black persons.

The first of these two themes is addressed as much to white students as to black, due to the fact that the traditional academic presentation of our Western culture has consistently been seriously narrowed and limited by the virtual exclusion of its Afro-American contributions and components. A true Liberal Arts education should be an enriching and broadening experience which will help the student develop a meaningful appreciation for the many distinct ways that different individuals and peoples view the world. This can be accomplished academically by providing the intellectual opportunity for the sharpening of cross-cultural insights which, in turn, will serve to unite the human family by building greater human understanding, the foundation-stone of all knowledge.

To the extent that the black experience in America is in part a separate experience, the wide-spread ignorance of that experience among non-blacks has in many ways helped to contribute to our nation's racial problems. The many non-black young persons who sincerely want to contribute to the solving of these problems will have the opportunity to do so through this new curriculum which offers a far deeper study of black culture than previous curricula did.

The second theme is based on the recognition that, although career doors are opening more widely to black persons, many of the old intercultural barriers to satisfaction and fulfillment in these careers still persist, while new barriers are perhaps forming as well. The future black professional person can greatly benefit by the study of these intercultural problems as a meaningful supplement to the study of the subject matter area of the profession.

Description and A View of the Major

The major will lead to a B.A. degree and may be completed in four or five years. Courses taken in the Department of Afro-American Studies will be credited toward degree requirements for all Liberal Arts students.

Students will be able to elect the major in Afro-American Studies at any time from the freshman to the middler year. With careful supervision from the student's counselor, programs of study which best suit the student's goals will be developed. Distribution requirements and language requirements will also be provided for in this manner.



A student will be required to take Freshman English, Foundations of Black Culture I & II, Science and Black Society I & II, Afro-American History I & II, Afro-American Literature I & II, Educational Issues for Black Americans, Black Community and Social Change, Contemporary Problems in Black Society, Economic Problems of Black Americans, a Field Seminar, and Directed Study for Senior Thesis.

Counselors will aid students in choosing recommended electives, of which a partial listing includes: statistics, political science, sociology, psychology, Language Arts, Third World Political Relations, The Black Novel, The Black Family, Seminar: Ellison/Wright, Black Ideologies, etc.



ART DEPARTMENT

Robert L. Wells, M.A., *Professor and Chairman*

FACULTY

Associate Professors

Ronald Davis, M.Ed.
Wheaton Holden, Ph.D.
Peter Serenyi, Ph.D.

Assistant Professor

Samuel Bishop, M.A., M.F.A.

Professional Preparation *Aims*

The Department of Art aims to introduce all interested and curious students to the various forms and styles of expression in the visual arts.

Description of Major

Courses cover the evolution of architecture, sculpture, painting, graphic arts, photography and film art, with emphasis on styles, techniques and cultural implications, some from pre-historic times to the present. Studio courses are also offered in areas such as painting, drawing and graphic arts. Students may take courses to enrich their lives, obtain a working knowledge of the structure of art, as well as prepare for graduate school and a career.

A View of the Major

For the student interested in majoring in Art History, members of the Department will offer individual guidance in the selection of courses best suited to individual goals.

To provide a fuller background for career or continued study, Art History majors are required to include the two-part course in the History of Art, one studio course, at least nine other art history courses, at least one elective in philosophy and music, and two courses in history.

The candidate for the Bachelor of Arts degree must also show proficiency in a foreign language through the collegiate intermediate level, or must take courses to reach that level.

The B.S. program does not include a modern foreign language requirement, but offers more concentration in the major area.

Graduates with a degree in Art History may work in related areas such as museums, or continue with preparation for careers as teachers, researchers, or writers.

BIOLOGY DEPARTMENT

Francis D. Crisley, Ph.D., *Professor and Chairman*

Professors

Fred A. Barkley, Ph.D.
Charles Gainor, Ph.D.
Charles M. Goolsby, Ph.D.
Abdul-Karim Khudairi, Ph.D.
Nathan W. Riser, Ph.D.

Associate Professors

Charles H. Ellis, Ph.D.
Janis Z. Gabliks, D.D.S., Ph.D.
Charles A. Meszoely, Ph.D.
M. Patricia Morse, Ph.D.
Joseph V. Pearincott, Ph.D.
Fred A. Rosenberg, Ph.D.
Ernest Ruber, Ph.D.
Brunhild I. E. Stuerckow,
Dr. rer. nat.
Henry O. Wertz, Ph.D.

Assistant Professors

H. David Ahlberg, Ph.D.
Harvey S. Bialy, Ph.D.
Helen Lambert, Ph.D.
Dale F. Levering, Ph.D.
Shafiq Shukri, ABSM
Phyllis R. Strauss, Ph.D.

Instructors

Stephen M. Brecher, B.S.
Paul A. Montagna, M.S.

FACULTY

The Biology major has been designed to provide a foundation education for subsequent entry into a wide variety of careers or professions. It is an excellent choice for a student who has a natural talent for the study of science, but who wishes to defer a choice of a career until he has obtained a solid liberal arts education.

It is an excellent background for professional study in schools of medicine, dentistry, osteopathy, optometry and veterinary medicine. Further graduate study leading to a master's or doctorate can lead to a fruitful lifetime of upper-level teaching and/or research in one of the specialized areas of biology such as the study of animals (zoology), plants (botany), microorganisms (microbiology), life processes (physiology), environment (ecology), and marine life (marine biology). Alternatively, a student can continue his study in one of biology's many subspecialties such as molecular biology (life processes on a molecular level), virology (viruses), mycology (yeasts and molds), genetics (inheritance), endocrinology (hormone systems), and bacteriology (bacteria). Biology majors not wishing to enter either professional or graduate schools often find employment on technical levels in Federal, state, industrial, hospital, or university laboratories doing research, survey, or quality control work in one of the specialties or subspecialties of biology. Numerous Biology majors either go into post-graduate training in such paramedical areas as nutrition or dietetics, public health or medical technology, or directly into positions in industries involved in manufacturing and distribution of pharmaceuticals, biological products, food, scientific equipment, and biological consulting services to other industries and communities. Many graduates with degrees in biology are found employed at all levels in fisheries, forestry services, county

Professional Preparation Aims

Description of Major



agencies, museums, aquariums, research vessels, and marine stations.

Preprofessional students are urged to seek out pertinent literature and counsel with the preprofessional advisory office early in their careers at Northeastern. *Students are cautioned that the successful completion of the required preprofessional program by no means ensures admission to a professional school since there are usually far more applicants than student spaces.*

A View of the Major

The Biology Department attempts to present a balanced program of biology ranging from the study of communities of organisms down to the molecular level. It consists of ten courses in addition to the required chemistry, physics, and mathematics courses. Six of these are organized into a sequence of required core courses without which the undergraduate biologist cannot function well in further study or work in his chosen career. Courses in the "lower tier" are General Biology, Animal Biology, and Plant Biology. They are generally prerequisite to the "upper tier"—Environmental and Population Biology, Genetics and Developmental Biology, and Cell Biology. The student is advised to take the core program in its proper sequence prior to taking his minimum of four upper-class electives. This is usually possible if the student has decided on his major in his freshman or sophomore year. For students who may decide to enter the major in their middler year, and providing the chemistry, physics, and mathematics requirements can be met, it is possible to complete a major by taking some of the electives concomitantly with core requirements.

Within the above general framework the Biology major may elect to work toward either the Bachelor of Arts degree or the Bachelor of Science degree. Although the general requirements are similar, the latter degree offers the opportunity for more rigorous work in mathematics, chemistry and physics, and a senior seminar in biology. The B.S. is often elected by students who are certain that they wish to pursue graduate study in biology after receiving a baccalaureate degree.

The Department publishes a "Biology Undergraduate Advisory Handbook" which is a guide to required and recommended courses for the Biology major. The booklet can be obtained in the Biology Office in Room 403 Richards Hall. For maximum effectiveness in the planning of a program, the prospective Biology major should obtain one as early as possible in his career at Northeastern.

Laboratories

The Department of Biology includes major laboratories, aquarium rooms, stockrooms, preparation rooms, research areas, and a large suburban greenhouse.

The laboratories are self-contained units fully equipped for the work to be undertaken in them. Included in the general biology, anatomy, bacteriology, microscopic anatomy, and physiology laboratories are appropriate museum preparations, models, charts, specimens, and slides. Fixed and portable closed-circuit television equipment is employed in laboratory instruction as required.

Special equipment for field studies on mammals, histochemical investigations, and hematological studies is also available. The Department has a close association with the University's Marine Science Institute at Nahant.



CHEMISTRY DEPARTMENT

Karl Weiss, Ph.D., *Professor and Chairman*

Professors

Bill C. Giessen, Dr. Sc.Nat.
Barry L. Karger, Ph.D.
Albert H. Soloway, Ph.D.
Alfred Viola, Ph.D.

Associate Professors

Fletcher S. Boig, M.S.
William E. Cass, Ph.D.,
Executive Officer
David M. Howell, Ph.D.
Conrad M. Jankowski, Ph.D.
Elmer E. Jones, Ph.D.
Philip LeQuesne, Ph.D.
John L. Roebber, Ph.D.
Efthalia J. Spinos, M.S.
Robert N. Wiener, Ph.D.

Assistant Professors

Donald C. Clagett, Ph.D.
Geoffrey Davies, Ph.D.
Arthur M. Halpern, Ph.D.
Harry E. Keller III, Ph.D.
James E. Quick, Ph.D.
William M. Reiff, Ph.D.

Supervisor of Laboratories

Bernard J. Lemire, B.S.

FACULTY

The Chemistry Department has three aims: firstly, to provide students the intellectual stimulation and discipline of studying a physical science within the context of the liberal arts; secondly, to prepare students for graduate study in chemistry; and finally, to impart to students a grasp of basic principles and techniques which are important in a variety of careers related to chemistry. The Chemistry major programs also serve to prepare students for the study of medicine and dentistry.

Chemistry is concerned with understanding the structure and properties of substances, and the transformations they undergo. In modern chemistry, the boundaries between the classical areas of analytical, inorganic, organic, and physical chemistry are no longer sharp; moreover, significant overlaps have developed with the fields of biology, physics, mathematics, and engineering. The Chemistry major programs at Northeastern reflect these trends.

Chemistry graduates are employed in a wide variety of technical functions, such as research and development, production, sales, market analysis, purchasing, and teaching. They are able to offer prospective employers the benefits of practical experience in some of these fields as a result of the cooperative work program. Many graduates continue in graduate studies, for which our programs provide an excellent foundation.

The B.A. and B.S. programs in Chemistry are normally based on five-year cooperative courses of study, although regular four-year courses of study are also available. The Department maintains a committee of advisers who provide aid in choosing courses and on other curricular matters for students at all levels.

In the freshman year, the courses taken will generally be English, calculus, physics, chemistry, a foreign language, and an elective. Students may be excused from the General Chemistry

Professional Preparation Aims

Description of Major

A View of the Major

courses by passing equivalency tests; in this case electives are substituted. German or Russian is recommended as the foreign language to be taken for the B.S. degree.

Upper-level courses include Organic, Inorganic, Physical, and Analytical Chemistry, and some advanced chemical topics. Qualified students are encouraged to undertake a research project under the supervision of a faculty member. For especially able students, an honors program is available.

The requirements for the B.S. degree include all the courses specified in the B.A. program plus some additional courses such as Differential Equations, Advanced Inorganic Chemistry, Identification of Organic Compounds, etc., which replace some of the B.A. electives.

Accreditation The Chemistry program at Northeastern is approved by the American Chemical Society. The B.S. degree meets the requirements for certification by the American Chemical Society; the B.A. degree is designed for students who are not necessarily planning a professional career in chemistry.

Facilities Hurtig Hall, the chemistry building, houses modern, air-conditioned laboratories for work in experimental chemistry. The basic courses include experiments that use up-to-date techniques, e.g., potentiometric and colorimetric analysis, spectroscopy, gas chromatography, calorimetry, and mass spectrometry. In addition, the excellent research facilities of the Department of Chemistry are available to upper-class students who participate in original research conducted by the faculty.

DRAMA AND SPEECH DEPARTMENT

Eugene J. Blackman, M.A., *Professor and Chairman*

FACULTY

Associate Professors

Mort S. Kaplan, M.A.
Michael L. Woodnick, M.S.

Assistant Professors

Barry L. Bailey, M.S.
Carl W. Eastman, M.A.
Jerrold A. Phillips, M.A.
Catherine L. Rothbard, M.A.

Instructors

K. Stormie Lineberger, M.A.
Marcia M. Littlefield, M.S.
Patricia H. Sankus, M.A.

Technical Director

Laurence H. Gowen, Staff

Professional Preparation

Aims

Theatre, one of the most ancient of the creative and communicative arts, remains one of society's active forces through its contact between live performer and collaborating spectator.

The academic theatre program at Northeastern gives the drama student an opportunity for preparation for careers in educational



and professional theatre, as well as background for advanced study at a graduate institution.

The undergraduate Drama major will be exposed to a program in which introduction to the total theatre experience, as well as immersion in the individual arts and crafts of theatre, will be made.

Theatre history, dramatic literature, playwriting, as well as acting, directing, technical production, scene design, lighting design, costume design, voice control and stage movement, are only some of the areas covered in classroom courses. What is theorized and learned in the classroom will be put to practical tests in the theatre laboratories—the stages and their shops. The Drama major will be able to and is encouraged to express individual creative and interpretive impulses in courses, in laboratory classes, in the working crews and casts of productions and will do so with applied taste founded in the awareness of controlled technique. Advanced students will be urged to demonstrate developed abilities in independently organized but faculty-supervised projects in acting, playwriting, criticism, directing and design.

Description of Major

A View of the Major

It is recommended that Drama majors take a Physical Education *skill* course during each of the quarters in residence. The following courses, when available, are recommended: Modern Dance, Ballet, Jazz Dance, Tumbling, Gymnastics, Judo, Boxing, Wrestling, Fencing, Weight Training, Physical Conditioning, Exercise and Physical Control, and/or Swimming.

It is also recommended that the Drama major have at least a basic familiarity with the other creative arts as well as the basic humanities. When practicable, the major should take course work in the following areas outside the major field of concentration: music, art, philosophy, American and English literature.

The difference between the B.A. degree and the B.S. degree is one of flexibility and concentration. The B.S. degree does not necessitate the Liberal Arts distribution requirements, language or science requirements, and allows substitution of specialized field courses for these requirements.

However, there are minimum requirements for both degrees, with 60 quarter hours to be taken in the major area. Thirty-two quarter hours are to be taken in: History of the Theatre I & II, Voice and Articulation, Speech for the Theatre, Scenic Production, Practicum in Play Production, Acting I, and Directing I. Twenty-eight quarter hours are to be taken in *any* of the advanced Drama and Speech courses offered, some of which are: Make-Up, Acting II, III, Directing II, and Stage Movement.

The theatre represents the major public laboratory to the Drama major, a place where theory is put into practice. All majors are expected to work in production each quarter in residence and are expected during their stay at Northeastern to fulfill a variety of crew assignments in construction, painting, sound, lighting, sewing, ticket selling, as well as crew assignments for the running of a show—wardrobe, make-up, props, scene shifting, ushering and house managing. Whenever possible, majors are expected to serve as stage managers and assistant stage managers. Appearing in a production is not a substitute for crew work and when reasonably possible all those concentrating in a performance aspect should, also, participate in crew activities.

A few places are kept available in upper-class performance courses for freshmen.

Accreditation

Basic course work offered by this Department more than satisfies the minimum undergraduate requirements for a Drama degree as suggested by the American Theatre Association and prepares the student to take the Graduate Placement Examination in Theatre.

Special Information

Although the Department of Drama and Speech does not offer a major in Speech Communication, Drama majors and others may choose courses in this specific area which, in essence, would accumulate in a package sufficient for an independent major. Students selecting elective courses in Speech can develop skills in the areas of public communication and personal performance. These courses are designed to stimulate the student's personal growth and development in perception and self-expression. The processes by which verbal and non-verbal messages influence human thought and behavior are studied.

**EARTH SCIENCES
DEPARTMENT**

David S. Westerman, Ph.D., *Assistant Professor and Acting
Chairman*

Associate Professors

Bernard L. Gordon, M.S.
David L. Wilmarth, Ph.D.

Assistant Professors

James R. Allen, M.A.
Richard H. Bailey, Ph.D.
William A. Newman, Ph.D.
Gerald D. Praeger, Ph.D.
Richard D. Ruggles, A.M.

FACULTY

Instructor

Conrad K. Casarjian, M.A.

The Department of Earth Sciences serves two major roles within the College of Liberal Arts:

1. It offers a degree program in geology as an in-depth study of a major area of the earth sciences.
2. Courses in geology, geography, oceanography, and astronomy are made available to all students as supplements to their total educational process.

**Professional Preparation
Aims**

Geology is a broad-based science which deals with the study of physical features, composition, history, and processes of the earth. The manufacturing of an enormous number of products composed of metals and petroleum derivatives is the basis of the economy of our society. The understanding of the origins of these natural resources and of how to assure their continued supply is one of the major roles of today's geologists. Only a small portion of the earth has been studied in detail, leaving many unexplored frontiers for each new geologist.

Description of Geology Major

Since the study of geology also draws on information from the other physical sciences, students should complete basic courses in chemistry, physics, and mathematics along with Physical and Historical Geology during their first two years. After completing the introductory geology courses and one year of chemistry, every Geology major takes a three-course sequence, Descriptive Mineralogy, Optical Crystallography, and Optical Mineralogy. A knowledge of minerals is fundamental to geological understanding. In addition to the required introductory and mineralogy courses, the student chooses a minimum of six (for the B.A. degree) or eight (for the B.S. degree) additional geology courses. There are also electives offered in the humanities and social sciences.

A View of the Major

Each student is assigned to an adviser in the Department. The adviser assists the student in making appropriate course selections as his knowledge and special interests develop. Though not required, courses in petrology, structural geology, and paleontology are usually among the electives chosen by undergraduates.

During the junior and senior years a student may select undergraduate research as one of his elective courses. Under the super-

vision of a faculty member a problem is selected, defined, and researched. These projects give the undergraduate the opportunity to go much more deeply into some aspect of geology that holds particular interest for him. Students who meet the college requirements for the honors program will also carry out an undergraduate research project.

Special Information

Field Trips

Though much geology can be learned from textbooks and in the laboratory, a sound geological education must also include direct contact in the field. Whenever it is appropriate, field work, on an individual or group basis, will be part of individual courses. The Department also offers two extended field trips each year in the fall and spring quarters. These trips are usually three or four days in length to areas in the Northeast of particular geologic significance. Geology majors are expected to participate in these trips.

ECONOMICS DEPARTMENT

Morris A. Horowitz, Ph.D., *Professor and Chairman*

FACULTY

Professors

Harold M. Goldstein, Ph.D.
Irwin L. Herrnsstadt, Ph.D.
Gustav Schachter, Ph.D.
Donald Shelby, Ph.D.

Associate Professors

Conrad P. Caligaris, Ph.D.
Ernest M. DeCicco, Ph.D.
Sungwoo Kim, Ph.D.
Peggy Musgrave, Ph.D.

Assistant Professors

David Anderson, Ph.D.
Craig G. Coelen, Ph.D.
Daryl Hellman, Ph.D.
Steven Swanson, Ph.D.

Instructors

Anthony Giachetti, M.A.
John Miranowski, M.A.
Martin Murphy, M.A.
P. K. Sawhney, M.A.
Bruce E. Searleman, A.M.
Renee T. Smith, A.B.
Andrew Sum, M.A.

Lecturers

Daniel Kraus, M.A.
Mehmet Tahir, M.A.
Saroj Sawhney, M.A.

The aims of the program of study in economics are to provide every University graduate with a better understanding of how our economy and other economies function, and to develop specialists in economics who are then qualified to hold employment as economists.

Economists study the ways in which scarce human and other resources are combined with technology to satisfy the material wants of individuals and society; they also analyze the factors which determine the success or failure of satisfying the economic needs of the nation. As social scientists, economists have developed a series of techniques and tools that help solve the many economic problems that face our nation and all other nations.

The study of economics is focused on the overall economy as well as the individual, the household and the firm. "Macroeconomics" is concerned with the performance, goals and policies of the overall economy, and deals with such problems as inflation and deflation, levels of production, employment and unemployment, growth and instability, and the monetary, fiscal and regulatory policies used by the government to improve the performance of the economy. "Microeconomics" is concerned with the economic behavior of individuals, households and firms, and analyzes the economic aspects of current problem areas such as racism, sexism, pollution and environmental damage, poverty, health and wealth, trade unions, etc.

A graduate of the program of study in economics may be employed in a community action program, or in the business world as an industrial economist, in general management, in banking, in industrial relations, or with a labor union; he may be in foreign trade, advertising, in economic research on a subject such as plant location; or he may qualify for entrance into the Civil Service.

A person trained in economics may become expert in analyzing consumer demands, the marketing and developing of new products, or the making of financial studies. He may conduct research, provide specialized services on a consulting basis, or go into teaching.

A University graduate with an Economics major or with a number of advanced economics courses generally is better prepared for entry into many graduate programs, as well as into schools of law and schools of business.

The program in economics provides considerable flexibility so as to permit the student to concentrate in the areas of his special interest. A student majoring in economics should plan to take the two-quarter course in Principles of Economics in his freshman or sophomore year.

The Principles of Economics' courses are basically problem-oriented, and suggest the range of insights which economics can offer in the analysis and solution of these problems. Upper-division courses in economics use varying degrees of theoretical analysis in conjunction with empirical materials to discuss and analyze a specific area of economics.

Other specific courses for the major include two quarters of fundamentals of mathematics, two quarters of economic statistics and two quarters of economic theory. Beyond these specific requirements for the major, the Department offers a series of elective

Professional Preparation

Aims

Description of Major

A View of the Major



courses in all areas of economics. In addition, honors courses, readings courses and a senior seminar are offered.

The Department of Economics offers both a Bachelor of Arts degree and a Bachelor of Science degree, both of which require the specific course requirements listed above. However, the B.A. degree is more in the liberal arts tradition. The College distribution and language requirements must be met, as well as the Department requirements of other social science courses and six economics electives. The B.S. degree is more of a professional degree. In addition to social science electives, this degree requires ten economics electives and one course in quantitative methods.

The core courses will provide training in economic theory, money and banking, public finance, labor, international trade, growth and development, industrial organization, comparative economic systems, and urban problems. In addition, tool courses such as statistics, mathematical economics, and quantitative methods are also available. Other electives and readings courses permit a student to study more deeply in areas of his own interest.

ENGLISH DEPARTMENT

Paul C. Wermuth, Ph.D., *Professor and Chairman*

FACULTY

Professors

Raymond E. Blois, Ph.D.
Victor E. Howes, Ph.D.
Samuel F. Morse, Ph.D.
Franklin Norvish, M.A.
Arthur J. Weitzman, Ph.D.

Associate Professors

Robert J. Blanch, Ph.D.
M. X. Lesser, Ph.D.
Jane A. Nelson, Ph.D.
Kinley E. Roby, Ph.D.
Lloyd A. Skiffington, M.A.
Herbert L. Sussman, Ph.D.
Stanley Trachtenberg, Ph.D.

Assistant Professors

Samuel J. Bernstein, Ph.D.
Francis C. Blessington, Ph.D.
Irene Fairley, Ph.D.
Gary Goshgarian, Ph.D.
Gerald R. Griffin, Ph.D.

Assistant Professors

Norma Kroll, Ph.D.
James E. Nagel, Ph.D.
Robert B. Parker, Ph.D.
Phyllis G. Reinstein, Ph.D.
Donald Roemer, Ph.D.
Phyllis A. Roth, Ph.D.
Steven Sands, Ph.D.
Ruth E. Sullivan, Ph.D.
Martin Tropp, M.A.
Joseph E. Westland, Ph.D.

Lecturer

Joseph B. DeRoche, M.F.A.

Instructors

William E. Biddle, M.A.
John O. Cech, M.A.
E. Wallace Coyle, M.A.
Robert J. Denn, A.B.
Ellen Goodman, A.B.
Thomas G. Hurley, M.A.
John A. Lanham, M.A.
Mildred E. Norman, M.A.
Brian T. O'Brien, M.A.
Garth I. Pitman, M.A.

The English Department curriculum is diverse in its aims and flexible in its design. For the general University community the curriculum offers possibilities in both creative and expository writing, in linguistics, and in American, English, and foreign literature. For the preprofessional student—in law, in medicine, in business, in engineering—it offers a broad intellectual and cultural frame for specialist concerns. For the major in English it offers substantial preparation for careers in teaching and research, advertising and publishing, radio and television—indeed, any field in which communication and judgment go hand-in-hand.

At a time when the price of imprecision in language is more than simple misunderstanding and the cost of changing values more than personal uncertainty, the study of literature provides "a momentary stay against confusion." It deals with the hard edge of being, an insight into the ways of men and women, at once clear and complex. In fact, the very structure of literature gives shape and meaning to the often formless experiences of life. And it does so with grace and force. To put it another way, literature "tells it like it is," not statistically, not abstractly, but with the details of fully realized people in accessible worlds, "imaginary gardens with real toads in them."

There is flexibility enough in the curriculum requirements and its details to accommodate the pace and interest of a wide range of students. After an initial introduction to the study of literature in the two-part survey and the poetry analysis course, a student is free to choose the order of required areas, whether it is Chaucer or Pope and Swift, the Romantic poets or the contemporary ones. Members of the Department are available throughout the year to help and advise a student, but the critical choice of order is his. So too is the choice within areas. The American literature requirement, for example, is met by successfully completing any two courses in it: among the current offerings are Major American Novels, The New England Renaissance, American Realism, American Romanticism, and Afro-American Literature. To this area, as to others, the Department regularly adds new courses and, hence, even more options.

The curriculum for major concentration in English consists of 13 four-quarter hour courses distributed in the following way: a two-part survey of English literature; poetry analysis; either Introduction to Linguistics or The History of the English Language; a course in each of three periods of English literature: medieval, 18th century, and 19th century; Shakespeare; any two courses in American literature; two electives: for example, Creative Writing, Science Fiction, Images of Women in Literature, the Novel of Violence; and a seminar—six are offered each year and are limited to fifteen senior students—in subjects as varied as The Arthurian Legends, The Traveller in America, and Literature and Psychoanalysis. Additionally, there are opportunities for studies in language and literature independent of formal course offerings: student and instructor get together informally to pursue a literary idea of mutual and particular concern.

Professional Preparation

Aims

Description of Major

A View of the Major

HISTORY DEPARTMENT

Raymond H. Robinson, Ph.D., *Professor and Chairman*

FACULTY Professors

Philip N. Backstrom, Ph.D.
Wallace P. Bishop, Ph.D.
Martha E. François, Ph.D.

Associate Professors

Norbert L. Fullington, Ph.D.
Donald M. Jacobs, Ph.D.
Stanley R. Stembridge, Ph.D.

Assistant Professors

Donald R. Allen, Ph.D.
Ruth T. Anderson, Ph.D.
Charmarie J. Blaisdell, Ph.D.
Ballard C. Campbell, Ph.D.
William M. Fowler, Jr., Ph.D.
Gerald H. Herman, M.A.
John D. Post, Ph.D.

Instructor

Martin R. Ring, Ph.D.

Lecturers

Richard S. Bentley, M.A.
Helen S. Frothingham, M.A.
Ruth H. Karp, M.A.
Robert H. Ketchum, Ph.D.

Professional Preparation *Aims*

History's concern with man in his diverse and complex past provides excellent opportunity for the development of greater understanding and appreciation of today's culture and civilization. Traditionally, history has been a major of great appeal to men and women desiring a broad base before they embark on careers in business, law, journalism, and government.

Other majors know that they want to work more directly in history. Some want to teach in public schools, and for them education courses leading to certification by the state may be elected. Those desiring jobs in private secondary schools need not be certified by state authorities. Teaching positions in colleges and universities require master's and, increasingly, doctor's degrees. An undergraduate major in History facilitates entrance to graduate programs in the field. Ordinarily, college and university teachers of history spend part of their time in research and writing.

Not all professional historians teach and write. Many find pleasure and profit working in public archives, private historical societies, museums, and restoration projects. Their careers serve other professional historians and, more especially the larger public.

Description of Major

For majors of such diverse interests and ambitions, curricula must combine sensible structure with flexibility. Majors at Northeastern may qualify for either a Bachelor of Arts or a Bachelor of Science degree. The former, requiring study of a foreign language, appeals to prospective candidates for graduate school where reading knowledge of foreign languages is necessary; the latter is designed for students desiring greater specialization in history and a social science orientation.

Candidates for both degrees are required to take the surveys in Western Civilization and American History, and The Historian's Craft, which focuses on methods, problems, and philosophies of historians. Beyond the basic courses are a wide range of offerings covering the political, economic, social, and cultural history of man in diverse times and places.

To assure a broad program of study the College of Liberal Arts requires that students choose courses offered by departments outside the area of the major. At Northeastern University, history is classified as a social science; so History majors must complete 40 quarter hours of work in the humanities and science/mathematics (see page 105). Sixty quarter hours of history are required for the B.A. degree; sixty-eight quarter hours for the B.S. degree.

The history requirements are broken into groups: Group A (Ancient, Medieval, and Early Modern Europe); Group B (Modern Europe); Group C (British North American Colonies and the United States); and Group D (Other Areas or Regions). A minimum of two courses (8 quarter hours) must be elected from each group.

A View of the Major



Students are also urged to elect courses in the related social sciences such as economics, political science, sociology, etc. Also recommended are data-processing and/or computer-programming courses or methodological courses taken in one of the social science departments, as well as a course in mathematics or statistics.

Majors are also urged to avoid overspecialization at the undergraduate level. Though there are no maximum limits on the amount of history that may be taken, the Department advises broad course selection as the best policy for its majors. All majors are assigned to departmental advisers who offer counsel about the program. Students are urged to seek advice about history electives, about other electives, and about the Honors program.

All qualified History majors are urged to consider the Honors program in History. Those accepted write honors theses under the direction of members of the Department. Students register for honors courses ordinarily in their last three quarters of enrollment, except for the summer quarter when honors courses are not ordinarily offered.

JOURNALISM DEPARTMENT

George A. Speers, M.Ed., M.S., *Associate Professor and Chairman*

FACULTY

Assistant Professors

Caroline I. Ackerman, M.S.

Richard J. Pothier, M.S.

Lecturer

Bob Eddy, M.A.

Instructor

Robert B. Ruttenberg, A.B.

Professional Preparation

Aims

In this modern world it is evident that society relies increasingly on the mass media so that its members may keep abreast of rapidly changing conditions all around them. It is the role of the journalist to observe, understand, analyze, explain, report, and interpret, as well as to provide leadership in ideas and information through the many outlets of the mass media.

Description of Major

Many opportunities exist in the growing field of journalism. A Journalism major would be qualified for openings with daily and weekly newspapers, news departments of radio and television stations, news bureaus, wire services, general and specialized magazines, industrial journalism, public relations, publicity, and many other fields not directly related to mass media. A journalism education actually provides an excellent background for many non-media fields where the communications process is important.

A View of the Major

A journalist should have a broad background of liberal arts courses on the undergraduate level, and most university-level journalism programs have long recognized this need. Along with this, he should have some undergraduate background and professional courses, but not to the point of overspecialization.

The generally accepted formula in journalism for the bachelor's degree is a combination of approximately 75 percent liberal arts courses and 25 percent professional courses. This combination is preferred by most graduate schools of journalism, as well as by professional journalistic leaders.

In the freshman year at Northeastern all courses are in the liberal arts. In each of the upper-class years the ideal arrangement is to take one journalism course each quarter, and in some quarters two, with three liberal arts courses in the humanities, social sciences, sciences, and mathematics.

Because journalism skills can be better expanded and understood with the aid of a laboratory, upper-class Journalism majors are encouraged to participate in the Cooperative Plan of Education. Co-op jobs with newspapers, radio and television stations, news bureaus, and public relations offices provide a laboratory experience. This is quite important to one who wishes to be part of the world of communications. In addition, such experience gives a student a major advantage if he or she decides to seek admission to a graduate program in journalism following graduation from Northeastern.



Journalism majors enrolled in the B.A. program will take eight quarter hours in each of the following: U.S. History, history electives, English literature, English electives, political science, sociology/anthropology or philosophy or economics. General electives of approximately 40 quarter hours or ten courses are also required. (See page 105 for foreign language requirement.) Thirty-two quarter hours are required in the Fundamentals of Newswriting, Techniques of Journalism, History of the Principles of Journalism, and Press and Society.

Students selecting the B.S. program will also take the aforementioned courses but must include 24 quarter hours in mathematics, physics, biology, or other science courses. In this case, there is no foreign language requirement.

MATHEMATICS DEPARTMENT

David I. Epstein, Ph.D., *Professor and Chairman*

Professors

Bohumil Cenk, Sc.D.
Edward M. Cook, M.A.
Holland C. Filgo, Ph.D.
Arshag B. Hajian, Ph.D.
Flavio B. Reis, Ph.D.
Gabriel Stolzenberg, Ph.D.
Harold L. Stubbs, Ph.D.
Jack Warga, Ph.D.

Assistant Professors

Samuel J. Blank, Ph.D.
Harriet Fell, Ph.D.
John Frampton, Ph.D.
Charles J. Freifeld, Ph.D.
Eugene Gover, Ph.D.
Nishan Krikorian, Ph.D.
Jayant Shah, Ph.D.
Brian Smith, Ph.D.
Betty Stark, Ph.D.

FACULTY

Associate Professors

Roger M. Antoine, M.A.
Shirley A. Blackett, M.Ed.
Edward J. Booth, Ed.M.
Mark Bridger, Ph.D.
Bruce Claflin, M.S.
Warren C. Dean, M.A.
Ellen H. Dunlap, B.A.
Alberto P. Galmarino, Ph.D.
Maurice E. Gilmore, Ph.D.
Samuel M. Giveen, M.A.
Robert D. Klein, M.S.
Nancy Kopell, Ph.D.
Norman S. McCallister, Ed.M.
Richard A. Rasala, Ph.D.
Thomas O. Sherman, Ph.D.
Victor R. Staknis, Ph.D.
Wilbert Wils, Ph.D.

The Department aims to develop and expand the abilities of students interested in this exact science, one of the oldest and most basic fields of science.

Professional Preparation
Aims

Description of Major

The Department offers two programs of studies in mathematics. One leads to a degree of Bachelor of Arts and requires a minimum of 11 mathematics courses. The foreign languages recommended are French, German, Italian, or Russian since there is more writing related to mathematics in these areas than in the other languages offered. The other leads to a degree of Bachelor of Science and requires a minimum of 14 mathematics courses but does not require the study of a foreign language.

A View of the Major

All students must take a math sequence and, as a rule, this sequence should be completed by the end of the sophomore year. It provides a basic working knowledge of the calculus of one and several variables, differential equations, some linear algebra, and numerical methods. With respect to the latter, while a computer programming course is not required, students will be encouraged and, eventually, expected to acquire the basic programming skills necessary for numerical solution of complex problems. An elementary programming course is available for this purpose.

Directed Study

For highly motivated students, a freshman-sophomore directed study program (beginning in the winter of the freshman year) runs concurrently with the calculus sequence and provides an informal setting for intensive discussion of mathematical concepts and theories and for independent research. Students interested in such a program should consult their calculus instructor.

Courses of directed study are also available for more advanced students.

A transition from the calculus sequence to more advanced parts of the curriculum is provided by Analysis I-II and Advanced Linear Algebra I. These courses are prerequisites for all advanced courses in applied analysis, complex analysis, topology, and foundations.

As a rule, students planning to take a substantial number of mathematics courses (e.g., two per quarter) should take these courses in the middler year. Students may wish to take a prerequisite for more advanced courses in algebra or one which includes linear, nonlinear, and dynamic programming or both.

Courses in probability, statistics, and numerical analysis may also be taken directly after the math sequence.

Courses in the theory of computation, e.g., systems programming, generally require only a sufficient background in that field.

In the fourth and fifth years, students who have completed Analysis I-II and Advanced Linear Algebra I will have a variety of mathematics electives from which to choose. Some will wish to concentrate in one area such as algebra, analysis, topology, or applied mathematics while others may prefer a more diversified program. Many of the upper-level courses, such as probability and complex analysis, reside in the common ground of "pure" and "applied" mathematics. Others, such as algebra and numerical analysis, are more specialized.

Students may wish to work out with their adviser a program of directed study and/or take first- and second-year graduate courses and seminars.

**MODERN LANGUAGES
DEPARTMENT**

Louis Cooperstein, M.A., *Professor and Chairman*

Professor

Samuel Jaramillo, Ph.D.

Associate Professors

Israel Aluf, Ph.D.
Nazzareno F. Cedrone, Ph.D.
Benedetto Fabrizi, D.M.L.
Charles E. Kitchin, M.A.
Philip H. Stephan, Ph.D.
Edward B. Williams, Ph.D.

Assistant Professors

Barbara Andrea, Ph.D.
Juliette Gilman, Ph.D.
Robert B. Modee, M.A.
John Spiegel, M.A.

Instructors

Elizabeth Boehme, M.A.
Anthony Ford, M.A.
Audrey Jolliff, M.A.
Betty Landesman, M.A.
Paul Laplante, M.A.
Elba López, M.A.
Bonnie McSorley, Ph.D.
Linda Morse, M.A.
David Pauling, M.A.
Holbrook Robinson, M.A.
Brenda Wegmann, M.A.

Lecturer

Gillian Gill, Ph.D.

FACULTY

The study of Modern Languages can be of value to all students, regardless of their major field of interest. In the complex and rapid pace of modern life, there exists the need for increased communication between varied and often divergent cultures, even those within the narrow confines of one's own community. In order to better understand and appreciate these cultures, it is of great value to comprehend the way in which the members of the culture think.

Language, as the principal means of communication, frequently offers the key to understanding. Thus language study may serve to help one to achieve a more cosmopolitan, open-minded, and sensitive view of the world.

The Department aims to provide professional preparation for students interested in elementary, secondary school, or college teaching, international business relations, government service, journalism, library science, world affairs, travel, and more recently, community service (especially Spanish-speaking areas).

A major in Modern Languages requiring advanced courses in two languages is available in French, German, Italian, Russian, or Spanish. Those who mean to continue into graduate study will do well to have also two or three years of high school Latin. Those who wish to teach in college must plan on graduate study.

The freshman year is normally to be considered a year for general background. It will establish the foundation upon which the major will be formed. It is a year which should be utilized to fulfill as many general requirements as possible so that the upper-class years can be devoted as completely as possible to the major discipline.

**Professional Preparation
Aims**

Description of Major



A View of the Major

Normally the study of the minor language would begin in the second year. However, in exceptional cases this pattern may be altered to permit a student to begin his second language in the freshman year, or, perhaps, to postpone it to a later year. The Modern Language major should plan to take at least two language electives per quarter from the beginning of the second year on. Again, of course, this pattern may be varied to fit the needs of the individual student.

It should be noted that the requirements indicated here for the major and minor languages are *minimum* requirements. When at all possible, a student is strongly encouraged to go beyond these minimum requirements, and even, perhaps, to pursue a third language.

The Department offers a choice of either a Bachelor of Arts degree or a Bachelor of Science degree. In each case, the student is offered a choice of French, German, Italian, Russian, or Spanish. One of these languages will be assigned as the major language, with a second as the minor language. Also, both degrees require Freshman English.

The B.A. degree is, of course, the traditional degree for this discipline. A candidate for this degree must satisfy the college distribution requirements for graduation and, in addition, must meet the departmental requirements in his major. These requirements for the B.A. are: 8 quarter hours in Western Civilization; 8 additional quarter hours in history (any history course relevant to the major is acceptable, except Western Civilization); 8 quarter hours of Survey of English Literature; a minimum of 32 quarter hours of advanced work in the major language and 8 quarter hours in the minor language. Advanced work may be defined as any course beyond the intermediate level of the language.

The Bachelor of Science degree is a recent addition to the program in Modern Languages. It differs from the B.A. primarily in its emphasis. Whereas the B.A. requires that the student satisfy the distribution requirements of the College of Liberal Arts, the B.S. waives these requirements in favor of a much more concentrated program in the major area. However, Western Civilization is still a required course.

In addition, the candidate must complete 8 quarter hours of Composition and Conversation in the major language and 8 quarter hours of Composition and Conversation in the minor language. He then must complete 40 additional quarter hours of advanced work in the major language and 16 additional quarter hours of advanced work in the minor.

Additional Information

In the basic language courses attendance in the language laboratory is required for two half-hour sessions per week. The facilities of the language laboratory are also available on an optional basis for advanced work.

**PHILOSOPHY AND
RELIGION
DEPARTMENT**

Walter L. Fogg, Ph.D., *Professor and Chairman*

Associate Professors

Edward A. Hacker, Ph.D.
Pavel Kovaly, Ph.D.
Joseph H. Wellbank, Ph.D.

Assistant Professors

William J. DeAngelis, Ph.D.
John R. Haule, Ph.D.
Stephen L. Nathanson, Ph.D.
Gordon E. Pruett, Ph.D.

Instructor

Michael R. Lipton, B.S.

FACULTY

Philosophers have studied the questions and the wider issues which arise out of human experiences and beliefs in all their rich variety—in art, religion, morality, science, and the social order. The philosopher's approach begins in wonder about the meaning and importance of these experiences for human existence. Philosophy helps the individual to create, refashion, and justify the divergent beliefs about the nature of things.

Philosophers, through discussion and writing, reexamine and reinterpret such issues as the justification for belief in God, the nature of moral judgments of right and wrong, the questions surrounding the quest for knowledge and value, and the nature of the logic and methods of the sciences. Through vigorous analyses, the philosopher questions, increases and deepens human understanding, and adds meaning to the fragmentary details resulting from specialization.

The program in religion does not offer a major. However, it provides a comprehensive introduction to religious studies. The program attempts to provide an understanding of religious man's experience at both individual and social levels. Thus religions (Christian, Jewish, Islamic) are studied as well as the mythical and mystical dimensions of religious experience. The program strives to make clear the relationship between the religious experience and the other facets of human life with which the liberal arts are concerned. Courses are offered at introductory and intermediate levels.

Northeastern's program for a Philosophy major is designed to provide a balanced understanding of the nature of philosophy and particular philosophical problems which arise in the various arts and sciences. A maximum number of electives has been provided so that a student may choose in accordance with his own background and interests.

In the sophomore year, the study of philosophy begins with a two-term History of Philosophy course designed as an introduction and as a preparation for more specialized study later. By the third or fourth year, students will find particular areas and seminars within philosophy which have special appeal for them.

Professional Preparation

Aims – Philosophy

Aims – Religion

*Description of
Major – Philosophy*

A View of the Major

Philosophy majors may pursue either a five-year co-op or a four-year full-time course of study.

The Philosophy program includes courses that strengthen the curricula of other departments and provide all students with a knowledge of the methods and traditions of philosophical and religious thought. Philosophy is of essential importance to a liberal education, providing the student with the opportunity to see the significance and inter-relations of human thought in all fields of human endeavor: the natural sciences; the social sciences; the humanities. Many select philosophy in order to develop a broad background in the humanities and to sharpen their critical abilities for later specialization in law, history, political science, education, and literature in graduate school. Other students find their background in philosophy an excellent preparation for the ministry, priesthood or rabbinate. Indeed, former Philosophy majors can be found in most types of professional careers.

Although the Departmental requirements for the B.A. degree are the same as those for the B.S. degree, those students taking the B.A. degree must meet the language and distribution requirements set by the College. All degree candidates in philosophy must take at least 8 quarter hours in English and 52 quarter hours in the Department, and must meet the following specific requirements: History of Ancient Philosophy and History of Modern Philosophy; Introduction to Logic or Symbolic Logic*; Epistemology or Metaphysics or Moral Philosophy; and at least one seminar. The remaining 32 quarter hours are philosophy electives, to be selected after consultation with the student's departmental adviser.

* *The Department emphatically recommends that students contemplating graduate studies in Philosophy take Symbolic Logic.*



PHYSICS DEPARTMENT

Michael J. Glaubman, Ph.D., *Professor and Chairman*

Professors / Ann O'Neil
Ronald Aaron, Ph.D.
Petros N. Argyres, Ph.D.
Alan H. Cromer, Ph.D.
Marvin H. Friedman, Ph.D.
Marvin W. Gettner, Ph.D.
Walter Hauser, Ph.D.
Giovanni Lanza, Ph.D.
Bertram J. Malenka, Ph.D.
Clive H. Perry, Ph.D.
Eugene J. Saletan, Ph.D.
Carl A. Shiffman, Ph.D.
Michael T. Vaughn, Ph.D.
Eberhard von Goeler, Ph.D.
Thomas H. Wallace, Ph.D.
Roy Weinstein, Ph.D.

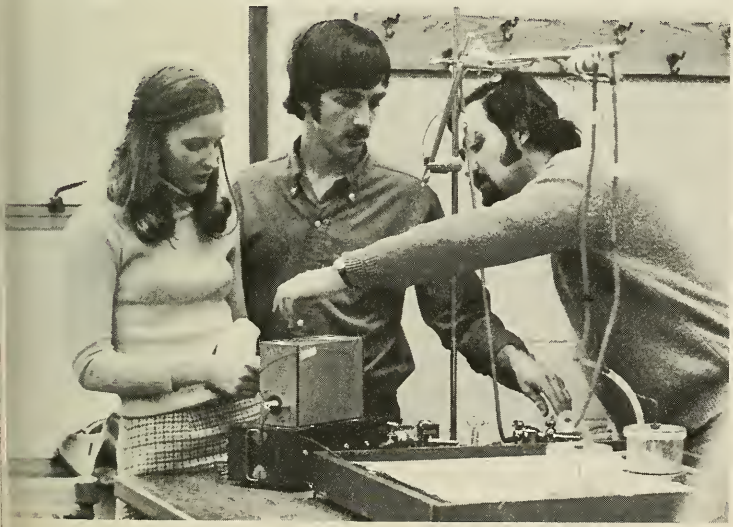
Associate Professors
Evangelos M. Anastassakis, Ph.D.
Lowell Dworin, Ph.D.
David A. Garelick, Ph.D.
Hyman Goldberg, Ph.D.
Bernard A. Gottschalk, Ph.D.
Richard A. Grojean, M.S.
Robert P. Lowndes, Ph.D.
Pran Nath, Ph.D.
James E. Neighbor, Ph.D.
Yogi N. Srivastava, Ph.D.
Allan Widom, Ph.D.
Fa Yueh Wu, Ph.D.

FACULTY

Assistant Professors
Robert I. Boughton, Ph.D.
David R. Earles, Ph.D.
William L. Faissler, Ph.D.
James L. Sigel, Ph.D.
Jeffrey B. Sokoloff, Ph.D.
Chian-Yuan Young, Ph.D.

In physics one studies nature experimentally in order to develop a general theory of the universe. The physicist's laboratory extends from a bench microscope to the body of an exploding super-star, and the theories which he uses attempt to explain the forces that shape all of nature. For example, the theory of the chemical

Professional Preparation
Aims



bond, and chemical and biological processes, as well as the formulas of engineering, are all derived from physics. The Physics Department offers a wide variety of courses geared to the interests of the humanities as well as science majors.

Description of Major

Professional physicists work in industry and in government laboratories on research, and in colleges and universities as teachers and researchers. At Northeastern, the Department of Physics is especially strong in both theoretical and experimental high-energy (nuclear-particle) and solid-state physics. There is also a strong program in statistical mechanics, field theory (including general relativity), and nuclear theory.

Co-op students and graduates find jobs in the above field, many of them in the Department itself, as well as in other areas of physics: i.e., underwater sound, space physics, and plasma physics. Some graduates continue in the Northeastern Physics program and obtain the Ph.D. degree here or go on to other graduate schools.

Physicists with bachelor and master degrees generally find employment in industrial concerns and government laboratories in areas of applied physics; for example, atmospheric physics, computer technology, electronics, etc. There is also much overlapping between physics and engineering. Physicists, chemists, biologists, and engineers will frequently work at the same problems. However, when a new field must be developed, such as nuclear energy or the taming of the fusion reaction, physicists are at an advantage because of the flexibility and fundamental character of their education. Majoring in physics does not necessarily imply making physics a career; one may end up in allied fields such as biophysics, chemical physics, medical physics, astrophysics, geophysics, oceanography, meteorology, or a completely new field of the future.

A View of the Major

Physics majors may work within either a B.A. or a B.S. program.

The program of study is quite flexible, reflecting the various interests of students majoring in physics. The first course in physics is common to all science and mathematics majors. It is a three-quarter course covering three areas: mechanics; fluid mechanics; heat, wave motion, and optics; and electricity and magnetism. It should be taken either with or after the three-quarter freshman calculus course. Freshman Physics and Mathematics majors usually start physics in the fall, but it can be begun in any quarter. Furthermore, only the first quarter is a prerequisite to the other two; the second and third quarters can be taken in reverse order.

The three-quarter introductory course is followed by two-quarter courses in physics and mathematics, and a two-quarter laboratory in General Physics. Beyond that, three courses in physics, three laboratories in physics and one course in mathematics are the only Departmental requirements for the Bachelor of Arts degree.

Candidates for the B.A. must meet the College requirements of two quarters of freshman English, a modern foreign language through the intermediate level, and the distribution requirements described on page 105.

Beyond the sophomore sequence, the further requirements for the B.S. degree are nine upper-class courses and three labora-

courses in physics, two upper-class courses in mathematics, and five technical electives. Most Physics majors will want to take more physics courses, and many more are offered, including Mechanics, Wave Motion and Optics, Thermodynamics, Modern Physics, Electricity & Magnetism, Quantum Theory, Mathematical Physics, and an additional laboratory course.

The Physics major can be taken as a four- or five-year program.

In line with the previous discussion, we suggest physics as a major for those intending to pursue careers in medicine and dentistry. The undergraduate Physics major's program is very flexible and the student can easily include the appropriate biology and chemistry courses required by medical and dental schools.

The Northeastern University Physics laboratories are under the supervision of individual professors who are outstanding researchers in various fields of physics.

Premedical and Predental Studies

Laboratories



POLITICAL SCIENCE DEPARTMENT

Valter S. Jones, Ph.D., *Professor and Chairman*

Professors

David W. Barkley, Ph.D.
R. Gregg Wilfong, Ph.D.

Associate Professors

George E. Berkley, Ph.D.
... Gerald Bursey, Ph.D.
Robert L. Cord, Ph.D.
Minton F. Goldman, Ph.D.
Steve Worth, Ph.D.

Assistant Professors

Dennis R. Goldenson, M.A.
Duane L. Grimes, M.A.
James A. Medeiros, Ph.D.
Suzanne Ogden, Ph.D.
David G. Pfeiffer, M.A.
David E. Schmitt, Ph.D.

FACULTY

Political science is concerned with the study of political institutions, the social and economic forces which shape them, and the cultural context within which they operate.

Professional Preparation Aims

The Department of Political Science at Northeastern University has three objectives: (1) to educate within the framework of the best liberal arts tradition; (2) to heighten a student's awareness of political forces in the environment and to sharpen his or her perception of a student's role as a citizen in a democratic society; and (3) to provide a solid academic foundation for those who elect political science or the law as a professional career.

Description of Major

For all students, the study of political science can be the gateway to a liberal education with its benefits of broadened interests, sharpened sensibilities, and a quickened sense of civic responsibility. If one has a special interest in politics, studies in this field provide excellent preparation for governmental services, the study of law, the teaching of government and related subjects, or for a political career.

For the student who wishes to pursue his professional studies at the graduate level, concentration in political science opens up many attractive opportunities. Opportunities for research are available in governmental research bureaus in the universities and in government agencies—state, local, and Federal; teaching careers are available in private institutions. The growth of specialized agencies in international bodies like the United Nations calls for the skills of the political scientist. Individuals with specialized training in political science are in demand also in some less obvious areas: in the public service programming of educational and commercial television, in journalism, and in legislative study and public relations activities with private associations.

The Department will give assistance as professional objectives are planned and will help to alert the student to professional opportunities and the means for taking the greatest advantage of them.

A View of the Major

Undergraduate work in the Department is designed to give students a broad and comprehensive exposure to the data of politics, while encouraging them to pursue extensive work in related social sciences.

A student may elect either the B.A. or the B.S. degree program. If he elects the B.A. program, he will have to meet the foreign language and distribution requirements of the College. If he elects the B.S. program, he will be required to take courses in quantitative analytical methods. However, either degree requires the following courses: eight quarter hours of Introduction to Political Science; four quarter hours each of Comparative Government, International Relations, Public Administration, and Political Theory; 20 to 24 quarter hours of electives in political science; six electives (24 quarter hours) in the *social sciences*, with one course in at least three of the following: anthropology, economics, history, psychology, or sociology. The B.S. student may pursue four quarter hours each in Scope and Methods of Political Science, Quantitative Methods, and a Research Seminar. Courses in basic math and Fortran and Fargo are also recommended.

PSYCHOLOGY
DEPARTMENT

Michael Terman, Ph.D., *Associate Professor and Acting Chairman*

Professors

John C. Armington, Ph.D.
Richard I. Lanyon, Ph.D.
Helen S. Mahut, Ph.D.
Bertram Scharf, Ph.D.
Murray Sidman, Ph.D.
A. Bertrand Warren, Ph.D.
Harold S. Zamansky, Ph.D.

Assistant Professors

Isaac M. Colbert, Ph.D.
Thomas R. Corwin, Ph.D.
Alexander A. Skavenski, Ph.D.

FACULTY

Associate Professors

Edward A. Arees, Ph.D.
Roger Brightbill, Ph.D.
Robert M. Chapman, Ph.D.
Perrin S. Cohen, Ph.D.
Charles Karis, Ph.D.
Harry Mackay, Ph.D.

The undergraduate curriculum at Northeastern has been carefully designed to introduce students to the scientific underpinnings of modern psychology. Our program places students in the best position possible to make a sophisticated choice about future advanced professional preparation.

The field of psychology—broadly defined as the science of behavior—has grown so rapidly that students aiming for careers in the field must almost always anticipate advanced study in specialized areas beyond the bachelor's degree. The diversity of academic and professional activities which we label "psychology" today may be seen in the following sampling of divisions of the American Psychological Association: *teaching, experimental, evaluation and measurement, physiological and comparative, developmental, personality and social, social issues, arts, clinical, consulting, industrial, educational, school, counseling, public service, military, adult development and aging, engineering, disability, consumer, philosophical, experimental analysis of behavior, history, community, psychopharmacology, psychotherapy, hypnosis*. Thus, undergraduates preparing to be psychologists, or those who just want to learn more about the field, have set quite a goal for themselves!

However, our courses are not merely aimed at preparing students for advanced training. They also reflect a theme of relevance to the personal and social concerns which clearly occupy an important place in the minds of today's undergraduates. For example, psychology has recently produced a new and powerful understanding of the way environmental and physiological factors affect human's behavior. Along with these scientific developments has come a technology whose methods have already transformed both individuals and society in a profound way.

How do we evaluate this science and its technology?

Professional Preparation
Aims

Description of Major

How do we ensure that researchers in psychology are free to investigate fully, and that the technology is applied humanely to create a better life for all people?

These are only a few of the questions Northeastern undergraduates will be asking as they progress through a newly designed curriculum which gives opportunities for laboratory practice and experimentation, field experiences in behavior technology, and small-group seminars to encourage critical and creative evaluation of psychology's accomplishments and its future.

Psychology explores many topics such as the function of the brain in determining behavior; how we see, hear and learn; what behavioral science can offer in the problem areas of mental retardation, personality problems, infancy and old age; how we might suggest social changes, based on laboratory data, to increase men's accomplishments and satisfactions in the modern world.

A View of the Major

Since modern psychology has a multidisciplinary nature, both B.A. and B.S. programs include distribution requirements in allied sciences to fulfill the need for wide exposure to varying techniques of scientific practice and interpretation. The sequence of elementary courses in the Department is being redesigned for "self-paced" study; it will enable a student to progress to more advanced courses just as soon as prerequisite course requirements are completed. Thus, the Northeastern Psychology program has a flavor of "independent study" about it, beginning as early as the freshman year. Students find this system flexible in terms of their needs and interests, as well as an intellectual challenge which requires a commitment to serious study and mastery of course material.

The Bachelor of Science program is usually recommended for students with a strong scientific or professional interest, who may ultimately consider applying to graduate schools in psychology, medicine, or environmental science. Final choice of the B.A. or B.S. tracks should be made only after a personal consultation with a psychology faculty adviser. B.A. candidates must complete at least 16 quarter hours of math and/or science courses (biology, chemistry, or physics); B.S. candidates, 24 quarter hours. Lab courses are recommended; courses geared specifically to humanities students are not. With B.S. students, the faculty recommends taking both a math and science sequence in the freshman year. The choice of Fundamentals of Math or calculus depends on a student's readiness to enter a course with calculus content.

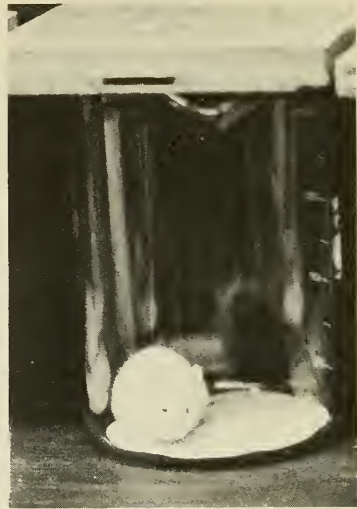
Foundations of Psychology I & II are part of a special group of "self-paced" psychology courses. Students receive a carefully structured sequence of study units, frequent progress evaluations, one-to-one tutorials, and optional small-group discussions. We call this group of courses a personalized system, since: (a) study is at a flexible pace which best fits students' needs; (b) individual tutorial assistance for any study problems is available—even if they are unique to one student; and (c) the assignments are structured to help achieve mastery of the course material, so that every student can aim for the grade of A.

Students who receive the grade of A in a self-paced course may apply for a Teaching Practicum, with elective credit applica-



able to the Psychology major. In this practicum, students learn how to give tutorials and solve study problems for students taking a course they have already mastered. Many students consider this opportunity an invaluable adjunct to standard course experiences—their own study habits improve as a result, they delve more deeply into course content, they become more sophisticated as psychologists, and they come to view that a goal for students in a modern university includes the sharing and transmission of knowledge among peers. The practicum includes a series of seminar discussions on teaching problems and techniques.

Similar courses may be taken for a series of self-paced offerings as a student progresses through the psychology curriculum. Registration is by invitation of each course professor. Beyond the required freshman English courses, and the math/science courses, the B.A. student will take about 16 quarter hours of humanities electives, a foreign language, and 32 quarter hours of psychology electives. The B.S. student will take the required English and math/science mentioned above and 24 quarter hours of psychology electives. Courses that both degree programs share are Foundation courses, Statistics I & II, Experimental Psychology I, II, and III, Learning and Motivation, Learning Laboratory, Experimental Personality, Impact of Psychology on Society, Ethical Problems of Psychology, Senior Seminar, and a Practicum in Physiological Psychology. A student will choose courses with the aid of his adviser.



**SOCIOLOGY AND
ANTHROPOLOGY
DEPARTMENT**

Norman Kaplan, Ph.D., *Professor and Chairman*

Professors

Blanche Geer, Ph.D.
Frank F. Lee, Ph.D.
Earl Rubington, Ph.D.

Associate Professors

M. Catherine Bateson, Ph.D.
Morris Freilich, Ph.D.
Elliott A. Krause, Ph.D.
Jila Leibowitz, Ph.D.
Morton Rubin, Ph.D.

Assistant Professors

Marcia Garrett, Ph.D.
Patricia Golden, Ph.D.
Wilfred Holton, Ph.D.
Jack Levin, Ph.D.
Alexander R. Rysman, Ph.D.

FACULTY

We seek a better understanding of the varieties of societies and social arrangements in which human beings live and die; how societies function and change, and how individuals, groups, and institutions interact.

Professional Preparation
Aims

Description of Major A major in this Department provides a background for a wide spectrum of careers in public or private service, preparation for graduate work, and preprofessional training.

Students may concentrate in both sociology and anthropology, or either. Students who wish to do both will have to fashion a program of their own with the help of an adviser.

Students enrolled in premedical, prelegal, paramedical, and a variety of other preprofessional programs should find that sociology and anthropology courses provide a relevant background.

A View of the Major Majors may follow either a regular four-year program of study or the five-year cooperative course of study. Cooperative work assignments vary from placement in mental hospitals and social agencies to placement in university, government, and other research settings. Transfers between the four-year and the five-year program should go smoothly, and registration in either is not an irreversible decision.

A student with special educational goals may, of course, take more departmental electives than are required. A strong background in sociology-anthropology can be beneficial in a number of applied areas. B.A. students may wish to look at the concentration requirements for B.S. students and consult their advisers for assistance in planning programs with specialized goals.

The Department offers a B.S. in Anthropology or Sociology or both. Students electing this option must fulfill all of the requirements for the B.A. degree and, in addition, must take a coherent program involving additional course work as outlined below. Specializations either involve more intense study within a concentration or are interdisciplinary.

B.A. students in Anthropology must take at least 48 quarter hours in departmental courses, including 40 quarter hours in anthropology and 8 quarter hours in sociology. The exact distribution can be individually arranged. Students should meet the following minimum requirements:

A. Preparatory Requirements:

Principles of Social Anthropology and Introduction to Sociology.

(Prospective majors with sufficient background may be exempted. A student should check with the Department.)

B. Core Requirements (at least three of the following, as available):

Language and Culture, Individual and Culture, Evolution and Society, Anthropology of the Family, Culture in Transition, Tribal Societies and Culture, and Peasant Society and Culture.

C. Elective Requirements:

Students must take at least six additional anthropology or sociology electives and at least one sociology elective. Qualified students are encouraged to take certain graduate courses with the consent of the instructor. Majors should consult their advisers freely since courses elsewhere in the University may help fulfill a student's special interests or focus.

D. Non-Departmental Requirements:

Six courses in social science.

B.S. students in Anthropology are required to take the basic core of courses required for a B.A. in Anthropology. In addition, a specialization (consisting of at least five courses) in an area of anthropological interest, is required. Such specializations are designed individually. A student *must* confer with an adviser who will help develop a program, place it on record, and supervise the student in implementing educational goals. Specializations in linguistics, biological anthropology, psychological anthropology, or area studies focusing on Africa, India, the Middle East, etc. can be arranged. The specializations are interdepartmental and interdisciplinary.

B.A. students in Sociology must take at least 48 quarter hours in departmental courses, including 40 quarter hours in sociology and 8 quarter hours in anthropology, and must meet the following minimum requirements:

A. Preparatory Requirements:

Principles of Social Anthropology and Introduction to Sociology.

(Prospective majors with sufficient background may be exempted. A student should check with the Department.)

B. Core Requirements (all of the following):

Statistical Analysis, Research Methods I, Research Methods II, Social Theory I, and Social Theory II.

C. Elective Requirements:

Students must take at least five electives in the Sociology-Anthropology Department from Groups A to D, as outlined below:

Group A (To meet minimum elective requirements, select one):

Social Psychology
American Society
Sociology of the Family
Urban Society

Group B (To meet minimum elective requirements, select two):

Community Analysis
Sociology of Formal Organizations; Men, Machines,
and Bureaucracy.
Sociology of Occupations and Professions
Collective Behavior
Sociological Theories of Crime

Group C (To meet minimum elective requirements, select one):

Political Sociology; Who Gets What
Social Stratification; Class, Status, and Power.
Social Change

Group D Any advanced anthropology course.

With the consent of the adviser, qualified students are encouraged to take certain graduate courses, directed study courses, and/or the Senior Majors Seminar.

D. Non-Departmental Requirements:

Six courses in social science.

B.S. students in sociology are required to take the basic core of courses required for a B.A. in Sociology. In addition, a specialization (consisting of at least five courses, usually three from within the Department and two from outside) in an area of sociological interest, is required. Such specializations are designed individu-



ally. A student *must* confer with an adviser who will help develop a program, place it on record, and supervise the student in implementing educational goals. Specializations focusing on human services, health services, political studies, urban studies, education and society, ethnic studies, and organizational studies can be arranged. Sample packages are offered below.

THE WELFARE OF SOCIETY*

- Sociology of Poverty
- Social Deviance II
- Applied Sociology: Practice and Theory
- Social Welfare Problems
- Community Service Practicum

URBAN STUDIES*

- Community Analysis
- Seminar in Urban Studies
- Social Stratification: Class, Status, and Power
- Urban and Metropolitan Government
- Urban Economics

LAW AND SOCIETY*

- Crime, Conflict and Justice
- Sociological Theories of Crime
- Social Control II
- Civil Liberties
- Law and Society

MEDICINE AND SOCIETY*

- Medical Sociology
- Sociology of Occupations and Professions
- Science and Society
- Public Health
- A course in Medical Economics

**These are just samples of approaches to these particular areas; there are many other possible combinations of courses. There are many other AREAS of specialization.*

MUSIC DEPARTMENT

Roland Nadeau, M.M., *Professor and Chairman*

Professors

Leo Snyder, M.M.
William Tesson, M.M.

Associate Professor

Herbert Silverman, Ed.D.

Assistant Professors

Reginald Haché, A.D.
Robin M. Hendrich, L.R.A.M.
Helen Keaney, M.M.
David Sonnenschein, M.M.

Instructor

Joshua Jacobson, M.M.

Part-Time Instructor

Raymond Smith, M.M.

Lecturer

James R. Mitchell, M.A.

FACULTY

The Department of Music offers 35 different credit courses for students with an interest in or desire to learn about music. The Department serves the musical and cultural needs of the University and of the various N.U. Colleges. It aims to provide a wide range of musical experiences for students and the University community with emphasis on the aesthetic aspects of intelligent listening to and learning about our musical heritage.

Aims

Department of Music courses fall within several categories:

- a. Basic Music Theory
- b. Historical Periods and National Styles
- c. Individual Composers and Their Music
- d. The Forms of Music
- e. Basic Appreciation (overview)

In addition, faculty members from the Department direct four student performance organizations:

- 1. The Early Music Players
- 2. The N.U. Choral Society
- 3. The N.U. Symphony Orchestra
- 4. The N.U. Band

Students from these performance groups, the music faculty, and artists from the community at large, participate in a program of over 60 concerts per year. These concerts are free and open to the public.

College of Nursing

Juanita O. Long, M.S.N., *Dean*

Lydia A. Bosanko, M.A., *Assistant Dean*

FACULTY

Associate Professors

Janet Carroll, R.N., M.S.

Flora M. DeScenza, R.N., M.S.

Mary E. Gonyow, R.N., M.A.

O. Barbara Goodfellow, R.N.,
M.S.N.

Marjorie P. Johns, R.N., M.S.

Jane M. Lee, R.N., M.S.N.

Mary E. Wilcox, R.N., M.S.

M. Delaine Williamson, R.D.,
M.S.

Assistant Professors

Elaine L. Capozzoli, R.N., B.S.

Barbara E. Carran, M.S.

Lael T. Cutler, R.D., M.P.H.

Olivia M. Gagnon, R.N., M.Ed.

Jean P. Hannan, R.N., M.S.N.

Mary P. A. Kane, R.N., M.S.N.

M. Marcia Lynch, R.N., M.S.

Susan C. Marchessault, R.N.,
M.S.

A. Elizabeth Norman, R.N.,
M.A.

Anne L. O'Brien, R.N., M.S.N.

D. Jeanne Otto, R.N., M.S.

Marilyn M. Smith, R.N., M.S.

Joyce E. Tingle, R.N., M.S.

Nancy Walden, R.N., M.S.

Instructors

Jane Aroian, R.N., M.S.N.

Margie K. Barry, R.N., B.S.

Nancy M. Carr, R.N., M.S.

Marilyn Crehan, R.N., M.A.

Ellen T. Daly, R.N., M.S.N.

Marie A. Doyle, R.N., M.S.

Sherry D. Doyle, R.N., M.S.

Barbara A. Lagerbom, R.N.,
M.S.

Susan Larkin, R.N., B.S.

Rose S. MacKenzie, R.N., M.S.

Barbara P. Madden, M.S.

Edna Mayer, R.N., M.S.

Geraldine A. Medici, R.N.,
M.S.N.

Barbara J. Morgan, R.N., M.S.

Mary S. Peabody, R.N., M.S.

Joyce A. Quilty, R.N., B.S.

Professional Preparation

Aims

The College of Nursing, first in the nation to operate on the Cooperative Plan, was established at Northeastern University in 1964. The College offers two distinct educational programs which prepare men and women to practice nursing.

The associate degree program, begun in 1964, is three years in length and leads to the degree of Associate in Science. Its

purpose is to prepare a beginning practitioner to give nursing care in a variety of patient-care settings.

The baccalaureate degree program, initiated in 1966, is five years in length and leads to the degree of Bachelor of Science. The program is also designed to prepare beginning practitioners, but it further provides a foundation for career advancement via graduate experience and/or study in such areas as clinical nursing, administration, teaching, and research.

There is a special program offered to a limited number of qualified licensed practical nurses who wish to expand their educational background and become registered nurses. Those who meet the requirements during the first year are granted credit for past experience and education toward the Associate in Science degree.

In common with the other Basic Colleges at Northeastern, the curricula of the College of Nursing operate on the Cooperative Education Plan. Each student obtains practical experience as a paid employee of one of the cooperative health agencies, in addition to college instruction. The cooperative work does not carry academic credit, but it must be satisfactorily completed. During periods of employment, students have the opportunity to increase nursing skills and gain significant experience in nursing settings, as well as earn money to help defray expenses.

The College of Nursing programs offer general education courses concurrently with nursing courses to provide the learning foundation for the practice of nursing. The Nursing major is planned in sequential order and draws on the content from the physical, biological and social sciences, and from the humanities. There is no direct transfer from one program to another.

Freshmen remain on campus for three consecutive quarters of academic study, and students in succeeding years alternate periods of study at Northeastern with periods of work in participating health agencies. Under the guidance of the College of Nursing faculty, clinical experience in the care of patients is introduced in the first year of the associate degree program and in the second year of the baccalaureate degree program. Approximately 20 outstanding hospitals and health-related agencies are utilized to provide facilities for clinical laboratories.

Cooperative work placements are arranged by a nursing coordinator in accordance with agreements made by the University and a number of hospitals in the Greater Boston area and surrounding communities. The hospitals employ students from both programs and provide appropriate sequences of work experiences. The cooperative work experience is a requirement for the degree, and students are expected to accept placement at any of the collaborating hospitals. Student preferences as to assignment will be given consideration in conjunction with other factors, but final decisions as to hospital assignment must rest with the nursing coordinator.

Either an Associate in Science or Bachelor of Science degree is awarded at the completion of the appropriate program. All candidates must successfully complete all the prescribed courses and periods of cooperative work. For the Associate in Science degree, 113 quarter hours are required and 172 for the Bachelor of

*A View of the
Five-Year Program*



Graduation Requirements Degrees

Science. An overall scholarship average of C in both nursing and general studies is required for graduation.

Graduation with Honor

Candidates for the bachelor's degree who have attained superior grades in their academic work will be graduated with honor. Upon special vote of the faculty, a limited number of this group are graduated with high honor or highest honor. Students must attend the University at least six quarters to become eligible for honors at graduation.

Accreditation

The programs of the College of Nursing are fully accredited by the National League for Nursing and approved by the Board of Registration in Nursing of the Commonwealth of Massachusetts.

Licensure

The programs of the College of Nursing enable graduates to take the professional examinations established by the Board of Registration in Nursing of the Commonwealth of Massachusetts. Graduates take these examinations for licensure as registered nurses when they are first offered at graduation.

Special Requirements

Students in the College of Nursing are required to wear the school uniform in clinical laboratory areas during academic quarters. A modification of the uniform is worn during cooperative work periods.

All students must carry malpractice insurance. Arrangements for this insurance are made by the University.

Sample Freshman-Year Program of Studies Associate Degree Nursing Program

First Quarter
Fundamentals of Nursing
Chemistry
Microbiology
Basic Psychology

Third Quarter
Fundamentals of Nursing
Growth & Development II
Physiology
English

Second Quarter
Fundamentals of Nursing
Growth & Development I
Anatomy & Physiology
Human Biology



First Quarter

Introduction to Technical Nursing
Chemistry
Microbiology
Basic Psychology

Second Quarter

Technical Nursing
Growth & Development I
Anatomy and Physiology
Human Biology
Abnormal Psychology

First Quarter

Biology
Western Civilization
English
Nursing

Second Quarter

General Chemistry
Biology
English
Nursing

Third Quarter

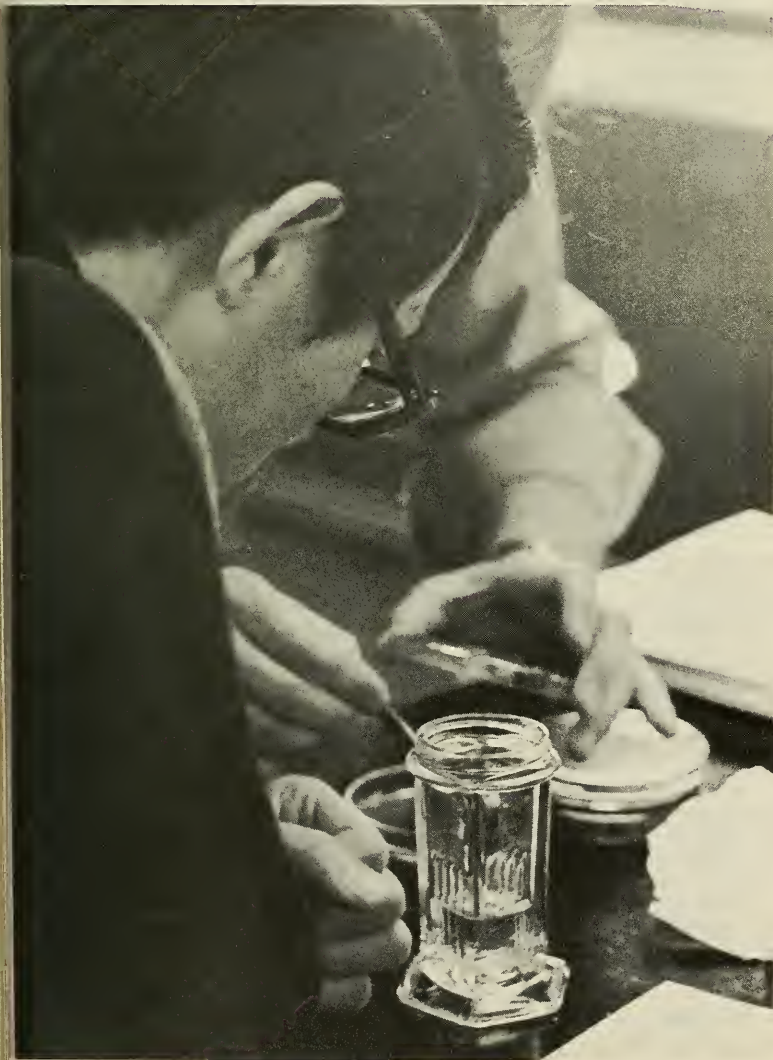
Nursing Seminar
Growth & Development II
Physiology
English
Trends in Nursing

Third Quarter

General Chemistry
Anatomy
Western Civilization
Nursing

**Sample Freshman-Year
Program of Studies
Associate Degree Program
for Licensed
Practical Nurses**

**Sample Freshman-Year
Program of Studies
Baccalaureate Degree
Nursing Program**



Associate Degree					
Basic Course Requirements		Course	Q.H.	Course	Q.H.
I. GENERAL REQUIREMENTS		*Basic Psychology	4	American Polit. Process	4
		*Chemistry	3	*Microbiology	4
		*English	4	*Anatomy and Physiology	4
		English	4	*Human Biology	3
		**Prin. of Sociology	4	*Physiology	4
II. PROFESSIONAL REQUIREMENTS		Course	Q.H.	Course	Q.H.
		*Fundamentals of Nursing	18	**Abnormal Psychology	4
		*Growth and Development I & II	8	**Maternal-Child Nursing Professional Development	12
		**Medical-Surgical Nursing I	11	Psychiatric Nursing	6
		Medical-Surgical Nursing II	7	Electives	8

* These courses are usually taken in the first year.

** These courses are usually taken in the second year.

Associate Degree LPN					
Basic Course Requirements		Course	Q.H.	Course	Q.H.
I. GENERAL REQUIREMENTS		*Basic Psychology	4	*Principles of Sociology	4
		*Chemistry	4	**English	4
		*Microbiology	4	**American Political Process	4
		*Anatomy and Physiology	4	or	
		*Human Biology	3	**U.S. to 1865	4
		*Physiology	4	or	
		*English	4	**U.S. since 1865	4
II. PROFESSIONAL REQUIREMENTS		Course	Q.H.	Course	Q.H.
		*Introduction to Tech. Nursing	5	**Medical-Surgical Nursing	7
		*Tech. Nursing	2	or	
		*Growth and Development I & II	8	**Psychiatric Nursing	6
		*Abnormal Psychology	4	or	
		*Nursing Seminar	3	**Maternal-Child Nursing	12
		*Trends in Nursing	1	**Professional Development	1
		*Maternal-Child Nursing	12	*Elective	4
		or		**Electives	8
		*Medical-Surgical Nursing	7		

* These courses are usually taken in the first year.

** These courses are usually taken in the second year.

Baccalaureate Degree					
Basic Course Requirements		Course	Q.H.	Course	Q.H.
I. GENERAL REQUIREMENTS		*Biology	8	**Fundamentals of Psychology I & II	8
		*Western Civilization	8	**Social Anthropology	4
		*English	8	Principles of Sociology	4
		*General Chemistry	10	Social Psychology	4
		*Anatomy	4		
		*Microbiology	4		
		**Physiology	6		
II. PROFESSIONAL REQUIREMENTS		Course	Q.H.	Course	Q.H.
		*Nursing	9	Maternal-Child Nursing	9
		**Nursing	10	Psychiatric-Mental Health Nursing	9
		*Growth and Development I & II	8	Public Health Nursing	9
		Nursing	26	Contemporary Nursing	9
		Medical-Surgical Nursing	9	Electives (6-7)	24-28

* These courses are usually taken in the Freshman year.

** These courses are usually taken in the Sophomore year.

College of Pharmacy and Allied Health Professions

LeRoy C. Keagle, Ph.D., *Dean*

Helene A. Loux, Ph.D., *Associate Dean of Allied Health
Professions*

Arnold S. Goldstein, J.D., *Assistant Dean of Pharmacy*

Northeastern University recognizes the increased demand for well-educated pharmacists and allied health professionals. The College of Pharmacy and Allied Health Professions is pledged to meet this need by combining its unique Cooperative Plan of Education with a highly innovative academic program, designed to prepare students effectively to become professional practitioners, to enter graduate schools, and to accept employment in the many areas responsible for the delivery of health care.

Fundamental to the College's approach to health care education is:

1. A curriculum of highly relevant and closely integrated courses in the physical, biological, behavioral, and administrative sciences comprising the basis of modern professional practice.
2. A responsiveness to the individual career goals of our students and the capabilities of structuring a course of study that will serve their individual needs.
3. A meaningful involvement in the clinical aspects of patient care via affiliations with teaching hospitals and related institutions.
4. A cooperative internship program under the guidance of qualified professional practitioners—to give our students the opportunity to acquire the skills and actual experience considered an integral part of the total program.
5. A commitment to the search and advancement of new and progressive concepts, ideas, and philosophies of education and professional practice.

The College occupies the Mugar Life Sciences Building on the Main Campus of the University. Completed in 1963, this multi-million dollar facility offers proximity to all the academic and extra-curricular activities of the University.

The building was so designed as to fully anticipate the physical needs of a growing and progressive college. Accordingly, the College enjoys spacious and well-equipped laboratories and classrooms for both its undergraduate and graduate programs, and its courses in dispensing and physical pharmacy, industrial pharmacy, pharmacy administration, medicinal chemistry, analyti-

Professional Preparation Aims

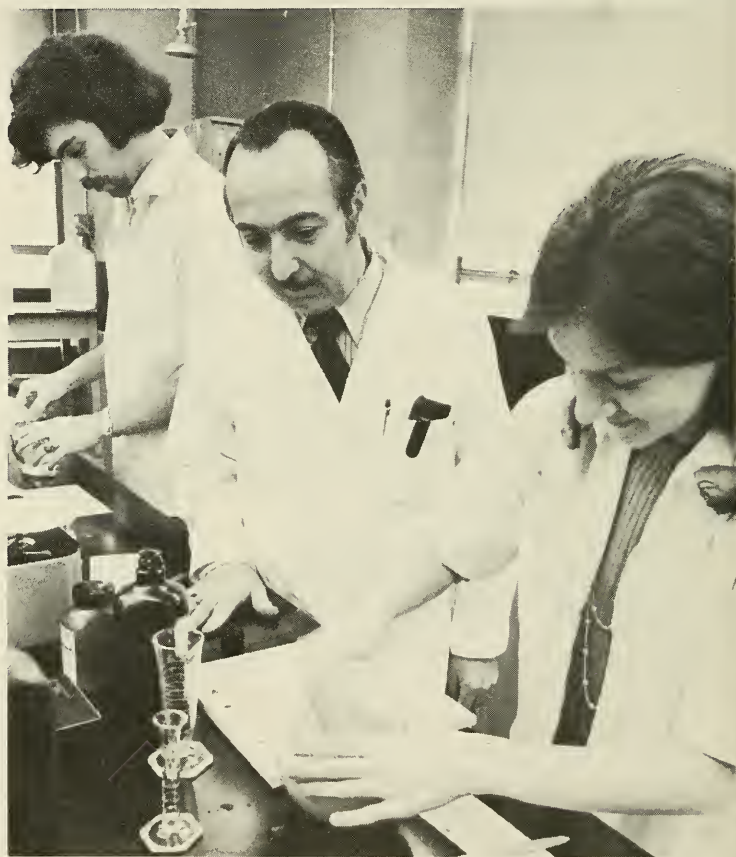
A View of the Five-Year Program

Facilities

cal chemistry, pharmacognosy, and pharmacology. Radio-isotope laboratories, a pharmaceutical manufacturing plant, clinical pharmacy laboratories, animal rooms, and complete audio-visual capabilities are also featured in this five-story structure.

Transfer with Advanced Standing

The College of Pharmacy and Allied Health Professions may accept qualified transfer students who have successfully completed one or more years of preprofessional course work in an accredited college or university.



Degrees Granted

The degrees of Bachelor of Science, Bachelor of Science in Pharmacy, Associate in Science, and Associate in Science in Dental Hygiene are awarded to qualified candidates.

Accreditation

Each of the programs offered by the College is accredited by the appropriate professional group. The College holds membership in both the American Association of Colleges of Pharmacy and the Association of Schools of Allied Health Professions.

PHARMACY

Professors

O. James Inashima, Ph.D.
LeRoy C. Keagle, Ph.D.
John L. Neumeyer, Ph.D.
Robert Raffauf, Ph.D.
John Reinhard, Ph.D.
Pierre F. Smith, Ph.D.
Albert Soloway, Ph.D.
Elliot Spector, Ph.D.

Associate Professor

Arnold S. Goldstein, J.D.

Assistant Professors

Roger W. Giese, Ph.D.
Donald S. Kosersky, Ph.D.
Betrand Laprade, Ph.D.
Joseph Palumbo, M.S.
Victor Warner, Ph.D.

Lecturers

Harry Brass, B.S.
Sumner Burstein, Ph.D.
Stanley Elfbaum, Ph.D.
Julius Vida, Ph.D.
John Webb, M.S.

FACULTY

The Pharmacy program is designed to satisfy the increased demand for pharmacy practitioners. The need for well-qualified pharmacists is likely to continue its growth trend in direct response to increased populations, greater emphasis on health care, and in particular to the newer and more diversified utilization of the pharmacists now in practice in this country. The majority are associated with community practice, and approximately one-half of these pharmacists are self-employed. Hospital pharmacy and institutional practice have attracted over 15,000 practitioners, and represents the fastest growing area of professional practice. The increased use of the pharmacist as a drug consultant to the medical and nursing staffs has opened the scope of professional opportunity and has afforded the profession even greater involvement as part of the health team.

Pharmacy also offers careers in research, production, law enforcement, and education, and a considerable number of our graduates have entered leading graduate and professional schools. Another significant trend is found in the increasing number of women entering the profession. Approximately one-third of the entering class is now composed of women.

The College offers a five-year curriculum which leads to the degree of Bachelor of Science in Pharmacy. The curriculum includes instruction in each of three natural divisions: (1) non-scientific courses in general education (the humanities and social sciences); (2) mathematics and the basic physical and biological sciences; and (3) courses in the areas of professional instruction: medicinal chemistry, pharmacognosy, pharmacology, pharmacy, and pharmacy administration.

The curriculum provides a progressive approach to pharmaceutical education. Emphasis is placed on the biologic and chemical applications of drug therapy, and the College maintains affiliations with several major teaching hospitals in which students undertake clinical clerkship. The program is sufficiently flexible to provide students the opportunity to specialize through the availability of

Professional Preparation

Aims and

Description of Major

A View of the Five-Year Major

an inside range of professional electives, and courses offered on an inter-disciplinary basis with other basic colleges. Instruction throughout the College uses the latest concepts in educational techniques, including extensive application of audio-visual material and directed study opportunities. The academic program is highly coordinated with the cooperative education component to provide a meaningful blend necessary for the training of a contemporary pharmacist.

In addition, through its Graduate School of Pharmacy and Allied Health Professions, programs leading to the Master of Science and Doctor of Philosophy degrees are offered.

Graduation Requirements
Degree

Candidates for the Bachelor of Science in Pharmacy degree must complete all of the prescribed work of the curriculum. Students who undertake the Cooperative Education program must meet the requirements of the Department of Cooperative Education before they become eligible for their degrees.

No student transferring from another college or university is eligible to receive a degree until at least eight quarters of academic work immediately preceding graduation have been completed at Northeastern.

Graduation with Honor

Candidates who have attained superior grades in their academic work will be graduated with honor. Upon special vote of the faculty, a limited number of this group may be graduated with high honor or with highest honor. Students must have been in attendance at the University for at least eight quarters before they become eligible for honors at graduation.

Accreditation

The program offered by the College of Pharmacy subscribes to the standards established by the American Council on Pharmaceutical Education and the American Association of Colleges of Pharmacy, the latter of which the College is also a member.

Licensure—Pharmacy

Pharmacists must meet certain requirements to obtain a license from the state in which they wish to practice. These requirements ordinarily include: graduating from an accredited college of pharmacy, passing an examination given by a State Board of Pharmacy, and completing an "internship" or apprenticeship.

The internship is a period of supervised practical experience in a preceptor pharmacy. This is generally satisfied during the cooperative work periods commencing at the end of the student's second academic year. During the periods of full-time employment, the salary received enables the student to pay a substantial part of his educational expenses.

**Sample Freshman-Year
Program of Studies
in Pharmacy**

First Quarter

Basic Math
Gen. Chemistry
English
Pharmacy Orient.
L. A. Elective

Third Quarter

Basic Math or Calculus
Biology
English
L. A. Elective

Second Quarter

Basic Math or Calculus
Gen. Chemistry
Biology
Pharmacy Orient.

In addition to the above courses a student may elect to take Basic ROTC.



Course	Q.H.	Course	Q.H.	Basic Course Requirements
*Basic Math	3	**Psychology	4	I. GENERAL REQUIREMENTS
*Basic Math or Calculus	6	**Sociology	4	
*General Chemistry	10	**Bus. & Prof. Spkg.	4	
*English	8	Anatomy-Physiology	9	
*Biology	8	Gen. Biochemistry	4	
*Physics	8	Chem. Biochemistry	4	
*Organic Chemistry	10	Microbiology	4	
*Economics	4	Liberal Arts Electives (4)	12-16	
Course	Q.H.	Course	Q.H.	II. PROFESSIONAL REQUIREMENTS
*Pharmacy Orientation	2	Public Health	3	
Pharmacy I & II	8	Prof. Practice I	5	
Introduction		Jurisprudence	4	
to Therapeutics	4	Pharmacy Administration	4	
Chem.-Pharmacology I	5	Prof. Practice II & III	8	
Drug Analysis	5	Clinical Pharmacy I	3	
Pharmacy III & IV	8	Clinical Pharmacy II	7	
Chem.-Pharmacology II & III	12	Placement Tech.	1	
Pathology	4	Professional Electives (7)	21-28	
Toxicology	4			

*These courses are usually taken in the Freshman year.

*These courses are usually taken in the Sophomore year.

ALLIED HEALTH PROFESSIONS

FACULTY

Professor

Helene A. Loux, Ph.D.

Associate Professor

Suzanne B. Greenberg, M.S.

Assistant Professors

Judith T. Barr, M.Ed.

Evelyn L. Cassara, B.S.

James J. Gozzo, Ph.D.

Catharine W. Hallsworth, M.S.

Albert E. Henn, M.D.

Britta L. Karlsson, M.S.

Matthew Stevens, B.S.

Rina L. Zamczyk, B.S.

Instructor

Sydney W. McNeil

DENTAL HYGIENE

Professional Preparation

Aims and

Description of Program

The Forsyth School for Dental Hygienists conducts a program of dental hygiene education and general education in cooperation with Northeastern University. Students in this two-year program attend classes both at the Forsyth Dental Center and at Northeastern. The dental hygienist is licensed to render direct preventive services to the patient under the direction of the dentist. Services include administering dental prophylactic treatment, preparing dental radiographs, and teaching prescribed methods of maintaining dental health.

A View of the Program

The first year includes courses in anatomy, chemistry, microbiology, nutrition, dental hygiene and materials, and some clinical dental hygiene work. In the second year the student takes general education courses such as English and sociology, as well as professional courses in pathology, periodontology, public health, dental anatomy, and pharmacology.

Degrees

Students completing the program will receive the Certificate in Dental Hygiene from Forsyth and the Associate in Science in Dental Hygiene from Northeastern University. Graduates are required to take the state board examinations in the state in which they intend to practice.

Accreditation

This program is accredited by the Council on Dental Education of the American Dental Association.

Other Information

Students are admitted directly to the Forsyth School for Dental Hygienists and should contact the school for applications and interview.

First Quarter

Functional Human Anatomy
Chemistry
Dental Anatomy
Radiology
Dental Hygiene
Clinical Dental Hygiene

Third Quarter

Microbiology
Basic Psychology
Head and Neck Anatomy
Dental Materials
Applied Nutrition
Clinical Dental Hygiene

**Sample Freshman-Year
Program of Studies
in Dental Hygiene**

Second Quarter

Functional Human Anatomy
Chemistry
Nutrition
Histology
Dental Hygiene
Clinical Dental Hygiene

Course	Q.H.	Course	Q.H.
*English Comp. and		*Basic Psychology	4
English Literature	8	**Sociology	4
*Chemistry	6	*Functional Human Anatomy	10
*Microbiology	4		

Basic Course Requirements
I. GENERAL REQUIREMENTS

Course	Q.H.	Course	Q.H.
*Dental Anatomy	3	**Pathology	3
*Radiology	2	**Periodontology	4
*Dental Hygiene	8	**Public Health	4
*Clinical Dental Hygiene	15	**Functional Dental Anatomy	2
*Nutrition	4	**Pharmacology	2
*Histology	2	*Head and Neck Anatomy	2
*Dental Materials	2		

**II. PROFESSIONAL
REQUIREMENTS**

*These courses are usually taken in the first year.

*These courses are usually taken in the second year.



**MEDICAL LABORATORY
SCIENCE
MEDICAL TECHNOLOGY**

Professional preparation*Aims**Description of Major*

The medical technologist is a skilled scientifically-oriented person who works with the physician and pathologist and performs laboratory analyses which aid in the detection, diagnosis, and treatment of disease. Utilizing a strong foundation in the biological and chemical sciences, the technologist performs complex clinical laboratory investigations: testing blood for transfusions, preparing vaccines, identifying bacteria and parasites, examining blood for malignant cells, and analyzing tissues and body fluids for inorganic and complex organic chemical substances. The graduate will often be employed in medical laboratory educational and supervisory positions.

A View of the Five-Year Major

Students enter the College as Health Professions majors in the Medical Laboratory Science program. The College offers a five-year cooperative (or modified-cooperative) curriculum which leads to the degree of Bachelor of Science, and (upon completion of the professional segment) eligibility to write the certification examination in Medical Technology given by the Board of Registry of the American Society of Clinical Pathologists. During the junior and senior years qualified students are assigned to one of the affiliated approved hospital schools of medical technology. To qualify for entrance to an accredited hospital school, a student must have an acceptable quality point average and must have completed the entrance requirements in mathematics, physics, chemistry, and biology as outlined by the Board of Registry of Medical Technology. The professional courses in hematology, pathogenic microbiology, serology, mycology, parasitology, chemistry, instrumentation, and blood banking are given at the University and at the hospital school.

Students will register at the University for 12 quarters including two interim sessions of five days each. This will include all academic quarters at the University as well as the total clinical program in the affiliated approved hospital school of medical technology. In addition, cooperative work periods will be regularly assigned.

Degree

The degree granted will be the Bachelor of Science. This degree represents not only the formal completion of the subjects in the selected course of study but also indicates competence in the field of specialization.

Accreditation

The hospital school of medical technology in affiliation with Northeastern University is approved by the Board of Schools of Medical Technology of the American Society of Clinical Pathologists and the Council on Medical Education of the American Medical Association.

Other information

The undergraduate program is conducted in affiliation with the New England Deaconess and New England Baptist Hospital Schools of Medical Technology.

Associate degree programs are also available in medical laboratory science. These when accompanied by, or followed by, the clinical and professional courses together with the appropriate practicum lead to eligibility to write the certification examination of the Board of Registry of the American Society of Clinical Pathologists for medical laboratory technicians (AD-MLT) and for cytotechnologists (CT).

Medical Laboratory Technology and Cytotechnology

First Quarter
Math or Calculus
General Chemistry
General Biology
English Composition
Dynamics of Health Care I

Third Quarter
Microbiology
English Literature
Mod. Lang. II or Elect.
Basics of Medical Laboratory Science
(Clin. Path. Methods)
Dynamics of Health Care III

Sample Freshman-Year Program in Medical Laboratory Science

Second Quarter
Math or Calculus
General Chemistry
Animal Biology
Mod. Lang. I or Elect.
Orient. to Laboratory Medicine
or
Dynamics of Health Care II

Course	Q.H.	Course	Q.H.
*English and English Literature	8	Genetics and Developmental Biology	4
*Biology—General and Animal	8	Physics	10
*Math or Calculus	8	Microbiology	4
*General Chemistry	10	Int. Mod. Language and/or other Humanities	12
*Organic Chemistry	10	Social Sciences	12
Analytical Chemistry	4	General Electives	20
*Physiology	8	Biology Elective	4
Cell Biology	4		

Basic Course Requirements

I. GENERAL REQUIREMENTS

Course	Q.H.	Course	Q.H.
*Dynamics of Health Care	2-3	Clinical Chemistry	4
*Orientation to Laboratory Medicine	1	Pathogenic Microbiology	4
*Basic Medical Laboratory Science (Clinical Pathology Methods)	4	Applied Study (at hospital)	12
*Basic M.L.S. Hematology	2	Communications in the Health Sciences	3
*Basic M.L.S. Immunohematology	2	Clinical Laboratory Quality Control	2
*Basic M.L.S. Chemistry & Instrumentation	4	Laboratory Management	2
Hematology and Immunohematology	4	Health Science Education	2
		Undergraduate Research	2

II. PROFESSIONAL REQUIREMENTS

These courses are usually taken in the Freshman year.
These courses are usually taken in the Sophomore year.

MEDICAL RECORD ADMINISTRATION

Professional Preparation

Aims and

Description of Major

A medical record administrator is prepared to organize, operate, and manage a Medical Records Department. He is responsible for designing health information and recovery systems; for planning, organizing, and directing medical record services; for developing, analyzing, and evaluating medical records and indexes; for cooperating with the medical staff in developing methods for evaluation of patient care; and for cooperating with the medical and administrative staff in research projects utilizing health care information.

A View of the Five-Year Major

In the first two years, the student interested in Medical Record Administration will concentrate on liberal arts and sciences including the required human anatomy and physiology courses and an overview of microbiology and basic chemistry. Introductory courses in health care science will serve to prepare the student for his role in health administration and health care delivery.

The program includes preparation in administration, departmental and hospital management and organization, and in electronic data processing. The professional courses in medical records science, medical terminology, and hospital law are complemented by directed applied study in medical record science at an affiliated hospital.

Degree

The Medical Record Administration program is offered on the Cooperative Plan. Successful completion of the prescribed curriculum, including the directed study at the affiliated hospital, will permit the award of a Bachelor of Science degree. This degree represents not only the formal completion of the subjects in the selected course of study, but also indicates competence in the field of specialization. Graduates are eligible to write the registration examination given by the American Medical Record Association.

Accreditation

This program in Medical Record Administration is approved by the Council on Medical Education of the American Medical Association in cooperation with the American Medical Record Association.

Special Information

Students interested in this profession should arrange for an interview with the program director.

Sample Freshman-Year Program of Studies in Medical Record Administration

First Quarter

English Composition
Biology
Math
Dynamics of Health Care
Psychology

Second Quarter

Chemistry
Biology
Math
Dynamics of Health Care
Modern Language or Pol. Sci.

Third Quarter

English Literature
Math
Dynamics of Health Care
Modern Language and Psychology
or
Modern Language and Chemistry
or
Psychology & Pol. Sci.

In addition to the above courses a student may elect to take ROTC.

Course	Q.H.	Course	Q.H.	Basic Course Requirements
*English Comp. and English Literature	8	Drugs, Use and Action	4	I. GENERAL REQUIREMENTS
*Mathematics	9	Organizational Behavior	8	
*Chemistry	4	Intro. Computer Science	4	
Public Speaking	3	*Psychology	4	
*Biology (General and Animal)	8	**Sociology	4	
*Anatomy and Physiology	10	*Modern Language or other Humanity	16	
*Microbiology	3	Other Social Science	8	
Statistics	4	Interpersonal Relations	4	
		General Electives	12	
Course	Q.H.	Course	Q.H.	II. PROFESSIONAL REQUIREMENTS
Medical Records Science I-IV	16	Seminar in Medical Records	2	
Medical Terminology	4	Health Science Education	2	
Foundations of Medical Science	6	Applied Study	9	
Hospital Law	2	Hospital Organization and Management	3	
Organization and Management Medical Record Dept.	6	Application of Med. Comp.	4	
		*Dynamics of Health Care	3	

*These courses are usually taken in the Freshman Year.

*These courses are usually taken in the Sophomore Year.



PHYSICIAN ASSISTANT

Lecturers for this program include faculty from the medical schools in the Boston area.

This is a program for the education of the Primary Care Physician Assistant who is a skilled person qualified by academic and clinical training to provide patient services under the supervision and responsibility of a doctor of medicine. The physician assistant may work in a variety of settings such as a physician's office, clinic, hospital, nursing home, etc. It is expected that the physician assistant will be able to do at least the following: elicit a detailed and accurate history, perform a physical examination, perform routine procedures such as the drawing of blood samples, injections, suturing and caring for wounds and counsel the patient on matters relating to health.

Professional Preparation

Aims and

Description of Major

A View of the Major

This 18-month program which begins in September includes didactic work at Northeastern University and clinical rotations in medicine, surgery, pediatrics, emergency medicine, rehabilitation medicine, psychiatry and obstetrics at teaching hospitals in the Boston area. Upon satisfactory completion of the program, students will be awarded a certificate by the University.

Special Requirements

Originally open only to medical corpsmen in the armed forces, the program is now open to other candidates as well; however, at this time, the Physician Assistant program is not designed for the high school senior entering an institution of higher learning for the first time. Admission requirements include high school graduation or a G.E.D. certificate, college level biology and chemistry, and some patient care experience.

Scholastic Aptitude Test scores are required. Application materials may be obtained by contacting the Physician Assistant Program Office at 202 Robinson Hall or by telephoning 437-3195.

Accreditation

The Physician Assistant program meets the requirements suggested by the Council on Medical Education of the American Medical Association as essential for an approved educational program to train primary care physician assistants. We are a member of the Association of Physician Assistant Programs.

Other Information

This program is offered by Northeastern University in cooperation with the Massachusetts Medical Society and has been funded by the Office of Economic Opportunity and the Office of Special Programs in the Department of Health, Education and Welfare.



First Quarter

Anatomy
Physical Diagnosis
Principles of Interviewing
Principles of Psychiatry
Basic Med. Lab. Science
Physiologic Basis of Disease

Third Quarter

Physiologic Basis of Disease
Diagnosis & Management of
Disease States
Principles and Concepts of
Surgical Intervention in Disease
Applied Study

**Sample First-Year
Program of Studies in the
Physician Assistant
Program**

Second Quarter

Diagnosis & Management of
Disease States
Principles of Pediatrics
Medical Care & Social Issues
Physiologic Basis of Disease
Applied Study

Course	Q.H.	Course	Q.H.	Basic Course Requirements
Anatomy	4	Basic Medical		II. PROFESSIONAL REQUIREMENTS
Medical Care and Current Social Problems	4	Laboratory Science	4	
Essentials of Physical Examination	5	Basic Pharmacology	3	
Principles of Interviewing	2	Medical Therapeutics	3	
Principles of Psychiatry		Survey of Rehabilitation Medicine	2	
Physiologic Basis of Disease I-IV	8	Basic Diagnostic Radiology	2	
Diagnosis and Management of Disease States I-II	4	Principles of Obstetrics and Gynecology	3	
Principles of Pediatrics	3	Fundamentals of Electrocardiography	2	
Principles and Concepts of Surgical Intervention in Disease Processes	6			

RESPIRATORY THERAPY

The respiratory therapist is concerned with the diagnosis and treatment of acute and chronic lung disease occurring in patients of all ages from newborn babies to senior citizens. Practitioners must be able to apply knowledge of basic sciences in order to use respirators, oxygen equipment, humidifying devices and pertinent diagnostic tools. Respiratory therapists provide direct minute-to-minute care to patients in continuous respirators, treat respiratory problems with intermittent therapy, teach the patient with chronic disease to maintain his own care at home, work with outpatients, use special respiratory function equipment to aid in diagnosis, and maintain sophisticated electronic and mechanical devices.

Professional preparation

Aims and

Description of Major

A View of the Major

Students enter the College as Health Professions majors in the Respiratory Therapy program. Mathematics and the physical, biological, medical, and health sciences provide the basis for the professional instruction in Respiratory Therapy. English, speech, psychology, and elective courses in the humanities and social sciences provide the general educational background. Clinical study at the affiliated hospitals provides the opportunity for direct patient care and the immediate application of highly specialized techniques.

Degree

The curriculum leads to the Associate in Science degree and includes all academic quarters at the University, a structured clinical program, and assigned co-op quarters. Successful completion of the program prepares candidates to take the examination of the American Registry of Inhalation Therapists and also provides a basis for continuation of study leading to a baccalaureate degree.

Accreditation

This program is approved by the Council on Medical Education of the American Medical Association.

**Sample Freshman-Year
Program of Studies
in Respiratory Therapy**
First Quarter

English Composition
Math
Physics of Fluids
Functional Human Anatomy
Intro. Resp. Therapy I
Dynamics of Health Care

Third Quarter

Basic Psychology
Basic Microbiology
Mechanics of Resp. Therapy
Dynamics of Health Care

Second Quarter

English Literature
Math
Intro. Resp. Therapy II
Functional Human Anatomy
Dynamics of Health Care

Basic Course Requirements**I. GENERAL REQUIREMENTS**

Course	Q.H.	Course	Q.H.
*English Comp. and English Literature	8	*Basic Psychology	
*Math	8	**Drugs, Use and Action	
*Functional Human Anatomy	10	**Public Speaking	
*Physics	3	Humanities Elective	
*Basic Microbiology	4	Social Science Elective	

II. PROFESSIONAL REQUIREMENTS

Course	Q.H.	Course	Q.H.
*Dynamics of Health Care	3	Advanced Respiratory Care	
*Intro. to Resp. Therapy I & II	5	**Foundations of Medical Science	
*Mechanics of Resp. Therapy	4	Health, Disease, and Disability	
**Procedures in Resp. Therapy I & II	8	**Hospital Law	
Respiratory Diagnostics	4	**Applied Clinical Study	

*These courses are usually taken in the Freshman Year.

**These courses are usually taken in the Second Year.

Other Schools and Colleges of the University

LINCOLN COLLEGE

Lincoln College offers engineering technology programs leading to the Associate in Engineering degree, the Associate in Science degree, and the Bachelor of Engineering Technology degree. These programs are made available as:

1. A full-time day curricula on the Cooperative Plan leading to the degree of Bachelor of Engineering Technology (B.E.T.) in Mechanical and Electrical Engineering.
2. A part-time evening program including Pre-technology Preparatory courses and degree programs leading to the Associate in Engineering (A.E.), and the Bachelor of Engineering Technology (B.E.T.) in Civil, Mechanical, and Electrical Engineering. The Associate in Science degree may be earned in the Mathematical, Physical, and Chemical sciences.

The day B.E.T. program is designed to meet the needs of the high school graduate or the student transferring from a community college or technical institute and who desires the full-time day curricula on the Northeastern Cooperative Plan.

In addition to its traditional curricula, Lincoln College Evening School offers interdisciplinary and certificate programs providing technological and professional development opportunities to meet special needs of the part-time student. These programs are designed to provide trained people for ready assimilation by the engineering field and to prepare students for the challenge of interfacing technology and society.

Recognizing the increasing need for higher levels of technical efficiency in firefighters, Lincoln College, in collaboration with local fire-fighting agencies, has designed a part-time evening program leading to an Associate in Science degree in Fire Technology. The curriculum includes a broad spectrum of those science technologies which are basic in coping with the complex fire-fighting problems of today's society.

UNIVERSITY COLLEGE

University College, so called because it draws upon the resources of the other colleges of the University, offers part-time evening programs in Liberal Arts, Business Administration, Law Enforcement, Education, and Health-Related Programs, leading to the Associate in Science and Bachelor of Science degrees.

University College and Lincoln College offer a joint program Allied-Medical Technology conducted in affiliation with a

number of hospital schools of medical technology approved by the American Medical Association. Students receive a Bachelor of Science degree from University College, and they may write the examination for certification as a registered medical technologist (ASCP).

Students may enroll as degree candidates or elect single courses appropriate to their needs and interests. Courses are scheduled in the day and evening at the Boston Campus, at the Suburban Campus in Burlington, and at the Framingham, Weymouth, Haverhill, and Lynn English High Schools.

Day programs for adults, under the direction of University College, were developed to meet the needs of adults with family or other obligations who wish to engage in part-time study during the day.

Program advisers are available by appointment day and evening in the University College Office. These faculty members are competent to assist the student in planning a program suitable to his general educational and career objectives. They can also answer questions relating to degree requirements, course sequence, and proper scheduling of courses. Appointments may be arranged by calling the University College Office (437-2400) or by coming in person to 102 Churchill Hall. There is no charge for this service.

Program advisers are also available during registration at all registration sites. No appointment is necessary.

GRADUATE AND PROFESSIONAL SCHOOLS

The nine graduate and professional schools of the University offer day and evening programs leading to the degrees listed:

Actuarial Science	Master of Science in Actuarial Science.
Arts and Sciences	The Master of Arts degree may be earned in economics, English, history, political science, psychology, sociology, and social anthropology. The Master of Science degree is available in biology, chemistry, clinical chemistry, mathematics, and physics. The Master of Science in Health Science and the Master of Public Administration degrees are also offered. In addition, there are programs leading to the Doctor of Philosophy degree in biology, chemistry, economics, mathematics, physics, psychology, and sociology.
Boston-Bouvé	Master of Science in Physical Education and Master of Science in Recreation Education.
Business Administration	Master of Business Administration. There are four methods of securing an M.B.A. degree: full-time non-intern, full-time internship, full-time assistantship, and part-time study. The full-time non-intern student may complete the program in one year of academic study. The full-time internship blends one full year of academic study with nine months of coordinated work as an intern in a business or non-profit organization. Under the full-time assistantship, students combine their studies with academic experience.

in the College of Business Administration. Part-time students have the advantage of attending classes in the late afternoon and evening to learn the theory behind the practical application of their employment.

Master of Education and the Certificate of Advanced Graduate Study.

The Master of Science degree may be earned with course specification in the fields of Chemical, Civil, Electrical and Mechanical Engineering, including a special six-year program in Power Systems Engineering leading to both bachelor's and master's degrees in Electrical Engineering; a similar six-year program in Mechanical Engineering leading to both bachelor's and master's degrees; Engineering and Engineering Management; the professional Engineer degree in Mechanical and Electrical Engineering; the Doctor of Engineering degree in Chemical Engineering; and Ph.D. degree in the fields of Electrical, Chemical, Civil and Mechanical Engineering.

The School of Law offers a full-time program of professional instruction leading to the degree of Juris Doctor (J.D.). The three-year curriculum includes twelve months of experience in law offices. There are no courses for part-time or evening students.

The program is directed toward preparing students for the practice of law in any state of the nation. The curriculum has a highly contemporary orientation. Extensive use is made of the Boston metropolitan area to add realism to the academic program, especially as it concerns the legal problems of an urban society.

The Master of Science degree is offered in Hospital Pharmacy, Industrial Pharmacy, Medical Laboratory Science, Medicinal Chemistry, and Pharmacology. The Ph.D. degree is offered in Medicinal Chemistry.

Master of Science in Professional Accounting. The concentrated 15-month program is designed to prepare liberal arts and other non-accounting majors for a career in professional accounting and for the CPA examination. The five-quarter course includes a three-month internship with a leading CPA firm in the middle winter quarter which provides both practical experience and significant financial support.

New classes start in mid-June of every year.

Some of these programs are offered on the Cooperative Plan; others provide teaching and research fellowships for able candidates.

Education

Engineering

Law

Pharmacy and Allied Health Professions

Professional Accounting

THE BUREAU OF BUSINESS RESEARCH

The Bureau, an integral part of the College of Business Administration, gives administrative assistance to research projects carried out under faculty leadership and supervision.

THE CENTER FOR MANAGEMENT DEVELOPMENT

Sponsored by the College of Business Administration, the Center annually conducts intensive programs designed to provide professional growth for middle-management executives who will ultimately be called upon to carry broader executive responsibilities. The program of instruction, based on modification of the Northeastern Cooperative Plan, permits participants to maintain their job responsibilities during the six-month period of the course.

CENTER FOR CONTINUING EDUCATION

Adult education programs offered by the Center for Continuing Education and University College have merged, bringing together a substantial number of credit and non-credit programs designed to suit the needs of adult students.

The Center was originally established in 1960 to relate the University to various unmet educational needs of the community in a period of accelerated change. Its workshops, conferences, institutes, forums and special programs cater to the interdisciplinary educational needs of professional people who come to the learning experience with a body of knowledge to share. Activities of the Center have stimulated widespread interest so that several of its programs are partly supported on grants and serve as models for developing similar continuing educational programs elsewhere.

Programs in continuing education are conducted at several campuses of the University, in the private facilities of business and industrial organizations, at community centers and government agencies; and at Henderson House, the University's residential conference center in Weston, Massachusetts.

Persons prominent in their professions and faculty of several nearby educational institutions serve as part-time instructors and resource persons in the implementation of the Center's programs. Activities of these experts are coordinated by an innovative full-time faculty. Approximately 6,800 part-time students and about 300 part-time instructors participate in the Center's programs annually.

PART III



PARTICULARS OF EDUCATION

PARTICULARS OF EDUCATION

About Admissions

To find a college or university which will suit one's needs and interests, a place where one can learn to feel at home and make sound preparation for a future career, is a goal of every student who plans to continue his education beyond secondary school. This can be achieved in a number of ways, such as talking with enrolled students, faculty and alumni, and by reading catalogues. High on one's list of priorities should be a visit to the college campus. The Committee on Admissions extends a cordial welcome to all students and has planned a series of on-campus experiences to make a visit as worthwhile as possible.

The Admissions Conference

It is only natural that students should have many questions about Northeastern—its programs of study, its services to students, and the Cooperative Plan of Education in which so many of its upper-classmen are involved. For this reason, the Committee on Admissions sponsors a series of Orientation Conferences for the benefit of students. Offered at 10:00 a.m. and 2:00 p.m. on Mondays and Fridays during the period September 1 through April 30 (except for legal holidays), these conferences have been most successful in helping students to understand the University better. They include a sound filmstrip in color and appropriate comments by an admissions counselor. This is followed by an informal question and answer period.

Special group sessions are also held in the summer between July 1 and September 1. Further information about these summer conferences may be obtained from the Admissions Department.

Guided Tours

Guided tours of the campus are held daily, Monday through Friday, at 11:00 a.m. and 3:00 p.m. Both the admissions conference and the tour should be scheduled in advance. The opportunity to visit the University's facilities and to observe student life on campus is one important way to learn about Northeastern. Commuting students who wish to visit the University's Suburban Campus in Burlington are encouraged to do so. This will appeal especially to those whose home communities are on the North Shore of Boston.

The Interview

The personal interview, although it is not required, is generally regarded as an appropriate time for students with special questions to meet with an admissions counselor. In studying the secondary school record, the counselor may discover some factor which merits further explanation. In this event, the applicant may be asked to arrange a visit to the Admissions Office. The interview, therefore, may be held at the request of the student or the counselor. In most cases, contacts with admissions personnel will be more beneficial if two publications, the *University Catalogue* and *Co-opportunities*, have been carefully studied before the personal interview.

Northeastern does not hold classes for students in the Basic Colleges on Saturdays; hence, guided tours cannot be provided at that time. A weekday visit to the University is strongly recommended. Special Saturday appointments are arranged on a limited basis, however.

Special Note

The Northeastern University Committee on Admissions believes that candidates should complete a secondary school program which is as challenging as the student's ability enables him to complete successfully. A recommended program should include courses in English, foreign language, mathematics, laboratory science, and history. Of particular importance are the total quality of the school record, continuity and proficiency in subjects which are critical to one's area of study at the University, and a wise choice of elective courses. The high school transcript should provide clear evidence of sound study habits so necessary to success in college study.

All candidates are encouraged to broaden their reading outside of class. It has been said that books stretch the mind. The student who can communicate ideas, understand word meanings, and write effectively is at a distinct advantage in the competition for admission.

Someday the period of the 1970s will be recorded as a time of great change in the calendars and programs of both secondary schools and colleges. At the high school level such innovations as independent study, seminars for upper-level students, research projects, and active participation in worthwhile community projects have become the rule rather than the exception. Many of these opportunities have come into being as the result of open-campus developments.

Northeastern University is understandably interested in the growth of the work/study concept in many secondary schools. Its Committee on Admissions looks with favor upon the variety of worthwhile experiences outside the classroom walls, from which so many students are profiting.

In similar vein, the University has introduced a degree of flexibility into its programs which makes it possible for enrolled students to explore a variety of academic areas. For example, through the preregistration system in the College of Liberal Arts, candidates for admission may delay definite educational choices until after the fact of acceptance. Northeastern's concern is that students not be forced into making educational and career decisions before their experience can make such decisions possible.

If a student hopes to enroll in the College of Liberal Arts, or if he intends to elect a language while enrolled in the College of Education or the College of Pharmacy and Allied Health Professions, he must have demonstrated proficiency in a foreign language. The Committee on Admissions believes that a background of foreign language study is desirable for all students whatever their career interests.

GENERAL REQUIREMENTS FOR ENTRANCE

Preparation for Study in Languages

It is only natural that evidence of special aptitude and the highest possible level of preparation in the sciences and mathematics should be required for entrance to certain programs of study of-

Preparation for Study in Engineering, Science and Mathematics

ferred by the University. Such programs include:

<i>Boston-Bouvé College</i>	<i>College of Nursing</i>
Health Education	A.S. Degree program
Physical Education	B.S. Degree program
Physical Therapy	<i>College of Pharmacy and</i>
<i>College of Education</i>	<i>Allied Health Professions</i>
The teaching of Science/	All programs
Mathematics, Speech/Hear-	<i>Lincoln College</i>
ing Therapy	B.E.T. Degree program
<i>College of Engineering</i>	
All programs	
<i>College of Liberal Arts</i>	
Biology, Chemistry, Geology,	
Mathematics, Physics	

It is recognized that courses in science and mathematics vary to a large extent in terminology, teaching methods, and in content. Applicants are encouraged, however, to complete the full sequence of such courses if possible. Admissions counselors may recommend or require additional summer school study prior to enrollment if an examination of the school record reveals a deficiency in preparation. Despite the emphasis upon mathematics and science in these programs, study in the social sciences and humanities is considered an important foundation for subsequent professional courses.

Preparation for Study in Business and Management

Candidates for admission must have successfully completed a strong college preparatory program in high school. A primary goal of this curriculum is to provide a broad preparation for leadership in administration. While mathematics plays an important role in the total program, strong emphasis is also placed upon study in the liberal arts. Through the behavioral sciences, students are afforded opportunity to develop skills in the management of people.

Preparation for Study in the Social Sciences, Teaching, and Law Enforcement

Many candidates for admission have enjoyed their greatest success in areas other than mathematics-science. Their interests lie quite naturally in the study of the humanities and social sciences. Thus such a student may choose to apply for admission to one of the following programs:

Boston-Bouvé College—(Recreation Education)

The major in Recreation Education is developed from a broad liberal arts foundation. Students may select an emphasis in Community Recreation, Outdoor Education and Conservation, or Therapeutic Recreation for work with the retarded, the handicapped, or the aging.

College of Criminal Justice

By its very nature, the program in law enforcement requires a strong base of liberal arts study before professional courses are introduced. Applicants for admission should therefore demonstrate an ability to succeed in their study of the behavioral and social sciences.

College of Education

Professional courses leading to teacher certification are based upon a strong foundation of liberal arts study in the humanities and social sciences. Included in this area are programs in Elementary Education, Special Education, and the Teaching of English, Languages, and Social Studies.

College of Liberal Arts

Broad and flexible programs are offered to meet a variety of student interests in Afro-American Studies, Art History, Drama, English, History, Journalism, Modern Languages, Music, Philosophy, and the Social Sciences. A wide selection of elective courses enables students to broaden their horizons in many areas of study.

The application should be filled out properly, signed, and forwarded to the Dean of Admissions, Northeastern University, Boston, Massachusetts 02115. There is a \$15.00 application fee. Checks should be made payable to Northeastern University. It is to the student's advantage to submit his application for admission promptly. The student is also responsible for seeing that his transcript and College Board scores are submitted to the University.

Under Northeastern's Rolling Admission Plan, candidates may be notified of their acceptance at that point in their secondary school careers when there is sufficient evidence that they will be able to profit from study at the university level. This may occur early in the senior year or after the results of College Board Examinations have been evaluated. In all cases of early acceptance, candidates are required to complete successfully the senior year of high school.

In certain cases, students may enroll at Northeastern prior to high school graduation. Such students may enroll at Northeastern either in September or January, thereby reducing the time to complete degree requirements by one year. A special form provided by the Admissions Committee requires the endorsement of the school principal or guidance counselor for early admission. Write to the Department of Admissions for further details.

Under Northeastern University's Open Campus Plan, qualified high school students who can gain release from their schools are invited to undertake collegiate study at Northeastern for credit while still enrolled in secondary school. In this way, the student is able to gain a better idea of the collegiate situation while he works toward college credit. For further information, write to the Department of Admissions.

The University cooperates with the College Entrance Examination Board in its CLEP Program. Qualified students are encouraged to write the general and/or subject matter examinations of CLEP, with the result that college credit may be allowed upon entrance. In general, the Committee on Admissions accepts the score range recommendations of the College Board. Northeastern University has been designated a CLEP Testing Center. Inquiries may be addressed to Room 302 of the Carl S. Ell Student Center Building.

APPLYING FOR ADMISSION

Rolling Admission Plan

Early Admission—Juniors, Second Semester Seniors

Open Campus Courses

College Level Examination Program

Entrance Examinations

All research clearly indicates that the best single predictor of academic success is achievement in secondary school. It is this factor together with the recommendations of the school counselor which are weighed most heavily in the evaluation process. Although the Scholastic Aptitude Test and three Achievement Tests of the College Entrance Examination Board are required, the Committee on Admissions recognizes that these test results do not measure such qualities as determination, imagination, and leadership ability.

In addition to the English Composition Achievement Test, two other Achievement Tests, in subject areas in which a student feels most competent, are required. There is no single schedule of testing which is recommended, but applicants are advised not to take subject matter tests unless such subjects are currently being studied.

For full information about College Board Examinations, consult a school guidance counselor or write directly to:

The College Entrance Examination Board

Post Office Box 592

Princeton, New Jersey 08540

or

Post Office Box 1025

Berkeley, California 94701

Admissions counselors will also be glad to answer questions about this testing program.

Advanced Placement

The University grants advanced placement credit to those students with a score of 3 or better in their Advanced Placement Examinations. Such students are excused from the basic courses in English, History, Chemistry, Mathematics, Biology, and Physics and in the advanced courses in languages to which the Examinations apply. They receive full credit for those courses from which they are excused.

Applicants are required to write their Advanced Placement Tests of the College Board in May.

Programs for Minority Group Students

Northeastern University deliberately seeks to expand educational opportunities for deserving minority group students and to recruit promising students from economically and culturally disadvantaged backgrounds. In so doing, it has increased its guidance and other supporting services in order that such students may be assured the opportunity to succeed in their chosen fields of study. These supporting services include tutorial study, programmed instruction, and summer study prior to enrollment. Other counseling services are provided by the University's Afro-American Center. Financial aid is granted as may be required to make college attendance possible.

General and Special Health Requirements

The general health of all applicants for admission must be satisfactory. Prior to registration at Northeastern, each applicant must submit on a Student Health Service Form supplied by the University evidence of a complete physical examination and chest X-ray. This information must be forwarded to the University physician for his review. Proper health clearance is considered a condition of admission.

Because of the special nature of certain professions which stress bodily coordination, physical skills, rehabilitation, and patient care, emphasis is necessarily placed upon sound health. For

For this reason, those who seek admission to the Boston-Bouvé College or the College of Nursing are required to receive special health clearance prior to enrollment.

Increasing numbers of accepted students seek information about a deferred admission policy. Those who seek a travel experience before entering college, and those who prefer to improve their financial resources through gainful employment rather than to begin college studies in the fall, will find that the following options are open to them.

1. The University now enrolls a January freshman class in most of its programs. January admission opens up travel and work opportunities through the month of December. Further information about the January class is available upon request.
2. Accepted students who do not submit the required tuition deposit on April 1 will be placed on an inactive roster. Those students who wish to enroll a year later should communicate with the Admissions Office no later than February 1, describing the activities in which they have been involved. Normally, a new certificate of admission would be issued to them at that time.

A student wishing to transfer into the Basic Colleges of Northeastern University may request advanced standing as an upper-classman on the basis of acceptable credits earned in an accredited two- or four-year institution or a technical institute.

Full details of the University's transfer policy are available from the Department of Admissions upon request. Following are the basic requirements:

1. Only a candidate who presents satisfactory college records may be considered for advanced standing credit.
 2. Credit will generally be given toward a NU degree for any reasonably equivalent course completed with a passing grade at another accredited institution.
 3. Candidates must be in good standing and eligible to continue in the institution they are currently attending.
 4. Evidence of honorable dismissal and satisfactory health are required. (Appropriate forms will be sent.)
1. Complete an application for admission no later than May 1 if September entrance is planned. In certain programs enrollment is possible at the beginning of each Northeastern quarter of study. Full information may be obtained from the Department of Admissions.
 2. Submit a high school transcript.
 3. Request that an official college transcript be sent. This should include a list of courses which will be completed prior to the end of the academic year.
 4. A personal interview is strongly recommended, but may be waived if the applicant is at a considerable distance from Boston.

NOTE: Transfer students are not required to complete entrance examinations.

Deferred Admission

ADMISSION OF TRANSFER STUDENTS

Basic Requirements

Application Procedure

**Financial Aid
for Transfers**

A number of scholarships, loans, and grants are available to qualified transfer students.

Required Deposits

If the Committee on Admissions makes a favorable decision on a student's application, he will be asked to submit a nonreturnable tuition deposit of \$100 by April 1. This deposit serves as an indication of his intention to enroll and is applied to his first-quarter tuition account. A dormitory deposit of \$100 is due at the same time for resident students. Requests to extend the deposit date to May 1 will be honored if they are submitted, in writing, to the Committee on Admissions no later than March 15. In certain programs, no extension will be allowed.

College Expenses

Students are advised that tuition rates and fees are subject to revision by the Board of Trustees at any time.

Those who apply for admission to the University are reminded that the freshman year is one of three quarters of full-time study. The Cooperative Plan of Education, under which students are gainfully employed for services rendered, begins in the sophomore year.

In addition to its primary purpose of providing invaluable on-the-job training, the Cooperative Plan also makes possible an education without the accumulation of a large personal debt. Because of the work/study plan and Northeastern's determination to keep basic expenses as low as possible, many deserving students who otherwise might not be able to afford an education have attended Northeastern.

Tuition for the freshman year is \$1,890.00. For those who enroll in September the tuition is payable in three installments at the beginning of the fall, winter and spring quarters. For those who enroll in January, payments are due at the beginning of the winter, spring and summer quarters.

Board and room expenses for those living in University-sponsored residence facilities vary slightly according to the dormitory to which a student may have been assigned. These costs are also paid in three installments at the beginning of each quarter, and are on a seven-day-a-week arrangement.

EXPENSES FOR THE FRESHMAN YEAR 1973-74 (Three Quarters)

Application Fee	\$ 15.00
Tuition	1,890.00 [†]
Board and Room (if applicable)	1,500.00 ^{*†}
Student Center Fee	37.50 [†]
Infirmary Fee (if applicable)	45.00 [†]
Health Services Fee	75.00
ROTC Deposit (if applicable)	10.00
(for uniform, equipment, etc.)	
Laboratory Deposit (if applicable)	20.00
(\$5.00 charge for extra cards)	
Books and Supplies	125.00
Personal Expenses	250.00

Total Freshman Expenses

[†] Payable in three installments at the beginning of each freshman quarter such as September 24, 1973, January 2, 1974, and April 1, 1974 (or for those who enroll in January the dates would be January 2, 1974, April 1, 1974, and June 24, 1974).

^{*} This scale is for Speare and Stetson Halls. Other dormitories are slightly less. See Housing section, page 196.

SPECIAL NOTE: Nonrefundable deposits of \$100 for tuition and \$100 for board and room are payable not later than April 1. These deposits are applied to the first quarter costs. The board and room deposit serves to reserve a space in a University dormitory.

Students who enroll in September will have a vacation period of 13 weeks between the freshman and sophomore years. Generally, Northeastern students use this period to earn money toward tuition costs.

EXPENSES FOR UPPERCLASSMEN

	Tuition for all Colleges except Engineering	Tuition for Engineering
<i>Division A</i>		
September 24, 1973.....	\$872.50	\$897.50
April 1, 1974.....	872.50	897.50
<i>Division B</i>		
January 2, 1974.....	872.50	897.50
June 24, 1974.....	872.50	897.50
<i>*Division C</i>		
September 24, 1973.....	872.50	897.50
January 2, 1974.....	872.50	897.50
April 1, 1974.....	872.50	897.50

* Division C is the term used to denote the classification of students who are temporarily or permanently on a non-cooperative academic year. Certain students in the College of Liberal Arts may elect a non-cooperative four-year program. In other colleges this program is a temporary one sometimes required of transfer students in order to phase into the Cooperative Plan.

REQUIRED FEES FOR ALL STUDENTS

Application Fee

A fee of \$15 is required when the application for admission is filed. This fee is non-returnable.

Accident and Sickness Insurance

The University provides an excellent hospital insurance and student health program. All students will pay a non-refundable University Health Service fee of \$75 per year. This fee will cover the group Blue Cross-Blue Shield program and the medical services which are provided to students by the University Health Service.

Student Center Fee

All students in the Basic Colleges on the Huntington Avenue campus are charged a fee of \$12.50 per quarter for the services available in the Student Center building.

Graduation Fee

A fee of \$25 covering graduation is required by the University of all candidates for a degree. This fee must be paid before the end of the fifth week of the last scholastic quarter in the senior year. Candidates in the College of Nursing are required also to pay a charge of about \$10 for their graduation pin.

BOSTON-BOUVÉ COLLEGE UNIFORMS

Students in the Physical Therapy program are required to purchase a uniform for physical therapy procedures and physical ed-

education; the cost is approximately \$20. The cost of clinic uniforms is approximately \$75 (pertains to upper-class years).

Men and women majoring in Physical Education are required to purchase uniforms. The cost approximates \$85.00.

Both men and women majoring in Recreation Education have required uniforms; the cost is approximately \$50.

Each Health Education major is required to purchase an activity uniform for Physical Education. The cost of the uniform is approximately \$25.

Students in the Associate Degree Program purchase uniforms in the fall quarter of the freshman year.

Students in the Baccalaureate Degree Program purchase uniforms in the fall quarter of the sophomore year.

The cost is approximately \$40.

Students in Respiratory Therapy purchase uniforms in the spring quarter of the freshman year.

Students in Dental Hygiene purchase uniforms in the fall quarter of freshman year.

Students in Radiologic Technology purchase uniforms in the fall quarter of the freshman year.

Students in the Medical Laboratory Science baccalaureate degree program purchase uniforms in the fall quarter of the junior year. Co-op assignments to hospitals will usually require uniform purchase in the fall quarter of the sophomore year.

All payments should be made at the Bursar's Office. Checks should be made payable to Northeastern University. Students are not eligible to attend classes beginning with the second week of any quarter unless their tuition has been paid or specific arrangements have been made with the Bursar for a plan of deferred payment. Deferred payment of tuition entails a fee of two dollars (\$2).

A fee of ten dollars (\$10) will be assessed for failure to make or arrange for payments in accordance with the prescribed regulations.

Students taking laboratory courses should be prepared to purchase laboratory deposit cards from the Bursar as directed by the department offering the course. These deposits will be charged with deductions for breakage, chemicals, and destruction of apparatus in the laboratory. A charge of \$5 each is made for extra cards.

Deposit cards are available at \$15 for Biology and at \$20 for Chemistry. The Chemistry card includes a \$5 deposit of which unused portions are refundable.

Freshmen enrolling in ROTC make a deposit of \$10 to cover loss of or damage to ROTC uniform and equipment. Any loss or damage exceeding the deposit will be charged to the student.

Engineering students should expect to pay approximately \$50 for drawing instruments and equipment.

COLLEGE OF NURSING UNIFORMS

COLLEGE OF PHARMACY AND ALLIED HEALTH PROFESSIONS UNIFORMS

OTHER FEES Payment of Tuition

Late Payment Fee

Laboratory Deposits

Reserve Officers' Training Corps—Uniform Deposit

General

Student Teaching—The charge for student teaching in the College of Education is \$436.25.

Men in professional Physical Education classes of 1974 and 1975 have a three-week resident camp requirement during the summer quarter of the middler or junior year. Students may expect to be assessed for living accommodations and food for the period of time in residence.

In the spring quarter of the freshman year, there is a required two-week resident program at the Warren Center for Physical Education majors. An additional \$70.00 fee is charged for room and board.

Recreation Education students have a two-week term of camping in Maine. The approximate cost is \$150–200.

A one-week session in winter sports is required for Recreation Education majors and may be elected by Physical Education majors. Full cost for Ski Week at North Conway, New Hampshire or an alternative location approximates \$90–100.

All upper-class students in Boston-Bouvé are required to carry liability insurance.

REFUNDS

The general policy in all schools and colleges of the University with respect to refunds of tuition to students is as follows:

The University provides all instruction on an academic quarter basis for which students pay at the beginning of each quarter. Tuition refunds will be granted through the first four weeks of a quarter only when specific conditions are met. Questions regarding refunds should be discussed with the Dean of Students' Office.

Tuition refunds will be granted only on the basis of the date appearing on the official withdrawal application when filed with the Registrar. Non-attendance does not constitute official withdrawal.

Refunds will be granted in accordance with the following schedule:

Amount of Refund

Official Withdrawal

Filed Within

Percentage of Tuition

1st week of Quarter	100%
2nd week of Quarter	75%
3rd week of Quarter	50%
4th week of Quarter	25%

Financial Aid

Financial assistance in the form of loans, grants, and work-study is available on an annual basis to qualified students. Undergraduate financial aid funds are administered in accordance with a nationally established policy and philosophy of financial aid for students pursuing a degree in higher education. It is a basic premise of this policy that parents have an obligation to pay for the education of their children to the extent that they are able to do so. Financial aid is available only for meeting the difference between a student's potential resources, (e.g. parent's contribution, summer or co-op earnings, outside agencies, etc.), and his/her annual educational costs. The parent's contribution is determined by an objective analysis of the family's financial state: net income, number of dependents, allowable expenses, indebtedness, and assets. Criteria established by the College Scholarship Service are used in making the evaluation.

The University does not award financial assistance in any form to students who are not citizens or permanent residents of the United States.

Applicants seeking financial assistance for the freshman year are required to submit a copy of the Parents' Confidential Statement, (PCS), to the College Scholarship Service by January 15. The PCS may be obtained from secondary school guidance offices or the Office of Financial Aid.

The PCS form is the only application that freshman applicants are required to submit.

Awards are announced by mid-March (if the applicant has filed before January 15). They take the form of a "package", i.e., a combination of scholarship, grant, loan, and work-study employment. Awards may be adjusted at any time upon notice of receipt of non-university or outside agency funds.

Applicants seeking financial assistance are required to submit a PCS form to the College Scholarship Service each year they apply for assistance. Upper-class applicants are also required to submit one "Upper-class Application for Financial Aid" in each of their upper-class years. Upper-class students should submit their applications 14 weeks in advance of the first quarter of the academic year for which they are seeking assistance.

Please note that aid granted from programs funded by the Federal government are dependent upon the amount of funds allocated to Northeastern University.

This is a program of part-time employment under the sponsorship of the Federal government. It is designed to help full-time undergraduate students meet their educational expenses. Students may work up to 15 hours weekly while attending classes or up to 40 hours weekly during vacation or summer

Application Procedure (Freshman Year)

Application Procedure (Sophomore—Senior)

FEDERAL PROGRAMS

College Work-Study Program

periods. Eligible students may work for the University or for public or private non-profit off-campus agencies. The Office of Financial Aid has the responsibility of placing qualified students in their job assignments.

Educational Opportunity Grant

This is a program of direct awards sponsored by the Federal government. They are available to a limited number of full-time undergraduate students who show evidence of having exceptional financial need and academic promise. Eligible students who are accepted for entrance may receive Educational Opportunity Grants ranging from \$200 to \$1,000 for each year of their undergraduate higher education up to a maximum period of four years or its equivalent. The Federal government requires that an Educational Opportunity Grant (E.O.G.) be matched by a grant, loan or part-time employment which must be accepted by the student, if the E.O.G. portion of the award is to stand. Aid over and above the matching portion may be accepted or declined at the discretion of the recipient.

Guaranteed Student Loan Program

Under this program, students who are matriculated degree candidates, enrolled for at least one-half the normal academic work load, may borrow from a participating bank or other financial institution. Terms and conditions vary from state to state, but a student generally may borrow up to \$1,500 a year (the law allows a maximum of \$2,500 per year) depending on financial need. The Federal government pays the interest while the student is in school if the student is eligible for interest subsidy.

The student must have submitted through the College Scholarship Service, a Parents' Confidential Statement or if he has been declared financially independent by the Financial Aid Office, a Students' Confidential Statement. These forms are available in the Financial Aid Office.

Applications for the loan itself are available from local banks or the Education Office of your state government. Additional information and necessary application forms for Massachusetts residents are available from the Financial Aid Office.

Health Professions Scholarship

This program is available to full-time students accepted for a course of study leading to a Bachelor of Science degree in Pharmacy. Applicants must evidence exceptional financial need and academic promise. The maximum amount of scholarship for an academic year is \$3,500 or the amount of the student's need, whichever is less.

Health Professions Loan

This program is available to full-time undergraduate students who have been accepted for a course of study leading to a Bachelor of Science degree in Pharmacy. A student who evidences financial need and academic promise may borrow as much as \$2,500 per academic year. Repayment of principal and interest does not begin until one year after the student ceases to pursue a full-time course of study. Repayment of principal may be extended over a ten-year period with interest at the rate of 3% per annum.

Law Enforcement Loan

This program is available to students for full-time work in a course of study leading to a Bachelor of Science degree in an area directly related to law enforcement. The applicant must evidence financial need and intend to pursue full-time employment in a law enforcement agency of a state or local government upon completion of his studies. The maximum loan is \$1,800 per academic year with no repayment of principal or interest beginning until six months after the student ceases to pursue a full-time course of study. Repayment of principal may be extended over a ten-year period with the interest at the rate of 3% per annum. Repayment may be deferred up to a maximum of three years while a borrower is serving in the Armed Forces.

Cancellation of up to 100% of the loan at the rate of 25% per annum may be allowed for each complete year of full-time employment in a public law enforcement agency.

National Direct Student Loan

This program is available to students who show evidence of financial need. Undergraduate students may borrow as much as \$1,000 each academic year up to a maximum of \$5,000 for their entire undergraduate education. Repayment and interest on these loans do not begin until nine months after the student ceases to carry at least a half-time academic load at an institution of higher education. The repayment of principal may be extended over a ten-year period with the interest at the rate of 3% per annum. Repayment may be deferred up to a total of three years while a borrower is serving as a Peace Corps or VISTA volunteer.

Borrowers who elect to teach the disadvantaged or handicapped may qualify for cancellation of their entire obligation over a five-year period. Borrowers serving as full-time members of the Armed Services of the United States are entitled to cancel 12½% per annum of the principal outstanding on any loans for each year of such service up to a maximum cancellation of 25%.

This Federal program is available to full-time students accepted for a course of study leading to an Associate or Bachelor of Science degree in Nursing. Applicants must evidence exceptional financial need and academic promise. The maximum amount of scholarship for an academic year is \$2,000 or the amount of the student's need, whichever is less.

This program is designed for full-time undergraduate students who have been accepted for a course of study leading to an Associate or Bachelor of Science degree in Nursing. Providing financial need is evident, a student may borrow as much as \$1,500 each year up to a maximum amount of \$6,000 for his entire undergraduate education. Repayment and interest on these loans do not begin until nine months after the student ceases to pursue a full-time course of study. The repayment of the principal may be extended over a ten-year period with the interest at the rate of 3% per annum.

Cancellation of up to 50% of the loan at the rate of 10% per year may be allowed for borrowers employed as professional nurses in any public (or private) non-profit institution. Cancellation of up to 100% of the loan at the rate of 15% per year may be allowed for borrowers employed as professional nurses in any public (private) non-profit institution in an area having a substantial shortage of nurses.

A limited number of undergraduate traineeships in physical therapy are made available to the University through the Department of Health, Education and Welfare. Senior Physical Therapy majors recommended by the faculty may receive financial awards which are applied toward their college expenses.

(Refer to section on Reserve Officers' Training Corps.)

Students should not apply for any specific scholarship. The University will award the particular scholarship to the student who qualifies for it.

Scholarship aid is available to entering freshmen who are relatives of alumni. Applicants must show evidence of scholastic achievement and financial need.

Established in 1940 in memory of the late Henry B. Alvord, Professor of Civil Engineering and Chairman of the Department for eighteen years, the award is made annually to a student graduating from an accredited secondary school who demonstrates superior academic ability and gives promise of succeeding in civil engineering. The grant of \$250 is made only to an entering freshman who is qualified for and plans to study civil engineering.

Established in 1960, the Armstrong Rubber Company of West Haven, Connecticut, offers annually a scholarship in the amount of \$1,800 to a qualified boy or girl admitted to the University for a full-time program of study. Although children of Armstrong Company employees are given preference, any student residing in New Haven County is eligible to apply.

Recipients of the scholarship will participate in the University's cooperative program and will be expected to spend at least four periods of student employment with the firm. Scholarship applications are available from the Company upon request and should be returned to the Personnel Office no later than April 30 of the year in which the student plans to enter the University.

The Badger Company, Inc., has made available to Northeastern University two grants of \$1,200 each to be given to first-year students. Recipients must be from secondary schools in the Greater Boston area and have been accepted into the College of Engineering. Summer employment shall be available to the recipient(s) of the grant during the summer before his ma-

Federal Nursing Scholarship

Nursing Student Loan

**Physical Therapy
Traineeships**

ROTC Scholarships

SCHOLARSHIPS FOR FRESHMEN

Alumni Scholarships
All Colleges

**Henry B. Alvord Memorial
Scholarships in Civil
Engineering**
Engineering

**Armstrong Rubber Company
Scholarships**
All Colleges

**Badger Company, Inc., Grant
Program**
Engineering

George L. Barnes Scholarship
All Colleges

triculation at the University; and cooperative work will be offered as long as positions are available, during his undergraduate years.

This fund was established in 1969 by Miriam P. Poole, daughter of George L. Barnes, in memory of her father, a distinguished member of the Northeastern University Corporation and Board of Trustees from 1937 until his death in 1965.

The income from this fund will provide a full scholarship annually to some deserving boy from Weymouth. The award is made on the basis of need and character. Some additional assistance may be given in the upper-class years.

The Godfrey L. Cabot Scholarship Fund
All Colleges

This fund was established by Dr. Cabot in 1954 in order to help meet the college expenses of employees or children of employees of Godfrey L. Cabot, Inc., and its subsidiary and associated companies. To be eligible, the employee must have completed at least five years of service to the company prior to the time the student enters the University. The University shall determine the number and amount of these scholarships, which are not limited to outstanding students and which are available to evening as well as day students. Students interested in applying for scholarship aid from this fund should communicate with the Cabot personnel office or the Office of Financial Aid at Northeastern University.

The Gardner A. Caverly Scholarship
All Colleges

This scholarship was established in 1957 through the generosity of Mr. Gardner A. Caverly, an alumnus of the College of Business Administration and a member of the Class of 1934. Its purpose is to provide financial assistance and encourage qualified students from the New England area to attend Northeastern University. In selecting worthy students for these scholarship awards, preference is given to graduates of the Rutland, Vermont, and Laconia, New Hampshire high schools.

Community Scholarships
All Colleges

The Community Scholarships were established by President Asa S. Knowles in 1963. Northeastern will grant scholarships in the amount of \$500 to qualified students from the following communities: Ashland, three scholarships; Boston, twelve scholarships; Burlington, three scholarships; and Weston, three scholarships.

The Cotrell Company Engineering Scholarship
Engineering

In 1961, the Cotrell Company of Westerly, Rhode Island, established an annual scholarship of \$1,000 to be awarded to a senior in the upper fourth of his class attending a high school in the Westerly area or to a senior in any high school who is the son of an employee of The Cotrell Company. Selection preference will be given to sons of employees and to students who have a long-range interest in the specialized fields of mechanical, electrical, and industrial engineering.

The William O. DiPietro Scholarship
Engineering

This scholarship was established in 1967 through the generosity of Mr. William O. DiPietro, a distinguished alumnus of the College of Engineering and a member of the Class of 1942. The scholarship is awarded annually to one or more deserving freshmen who demonstrate a high caliber of achievement and a desire to fulfill the limits of their ability in both academic and cooperative periods of study. In considering recipients for this scholarship, preference will be given to sons of employees and to students who have a desire to major in Chemical Engineering. It is intended that those students receiving awards from this scholarship might someday contribute to this or other scholarships themselves, thereby perpetuating growing funds that will help other deserving individuals.

Educational Opportunity Grants

(See section describing Federal Programs.)

Carl Stephens Ell Alumni Scholarships
All Colleges

To honor Dr. Carl Stephens Ell, the second president of Northeastern University, the Alumni Association, in 1958, established these scholarships. Either freshmen or upperclassmen enrolled at the University are eligible. Awards will be made to worthy students on the basis of scholastic ability and need. The scholarships are to be distributed as equitably as possible among students in the Basic Colleges and University College. Preference shall be given to sons and daughters of Northeastern Alumni.

Elmer H. and Daisy M. Everett Scholarship
All Colleges

The purpose of this fund, established in 1961 by Mr. and Mrs. Elmer H. Everett, is to provide scholarship aid for a qualified entering freshman or upper-class student who will receive the greatest benefit from this assistance. The scholarship, to be awarded annually, will be equal to one-half tuition for a full academic year.

Financial Aid / 183

Preference will be given to a worthy student who is a member of, or the son or daughter of a member of, the Carter Memorial Methodist Church of Needham Heights, Massachusetts, or to another student suggested by the minister of this church. Should there be no qualified candidate available from the above source, then the scholarship shall be awarded to any worthy boy or girl.

Two full-tuition scholarships are awarded each year to first-year students enrolled in the College of Business Administration. The scholarships are awarded in memory of George Raymond Fennell, formerly Assistant Director of Admissions and Director of the Northeastern Student Union.

General Motors has a vital interest in higher education in America. Under its "College Plan," one five-year scholarship is granted to a high school senior of high ability who has been admitted to one of Northeastern's Basic Colleges. The selection is made from among all students accepted for admission. A special application is not required. (*Alternate years commencing with 1971.*)

The Charles Hayden Foundation, created by the will of the late Charles Hayden, an alumnus of the Boston English High School, offers annually memorial scholarships to freshmen at Northeastern University. The scholarships are awarded to "deserving boys" whose parents are unable to finance the entire cost of their education.

This scholarship was established in 1968 through the generosity of the Hurtig family in memory of Edward L. Hurtig, an alumnus of the College of Engineering, Class of 1946. The scholarship is awarded annually to an entering freshman in the day colleges who has demonstrated the necessity for financial aid. Preferences will be given to recipients of the Educational Opportunity Grants Scholarship Program of the United States Office of Education.

This award, established in 1968, is given annually to an entering freshman in the day colleges who has demonstrated the need for financial aid. Preference will be given to graduates of the Boston English High School. Should there be no qualified candidate from this source, the award will then be given to any worthy student.

This scholarship was established in 1972 by Merchants Tire Company in honor of Max Katz, a Class of 1917 alumnus of Northeastern and Founder and Chairman of the Board of Merchants Tire Company. The scholarship is awarded annually with selection preference given to a son or daughter of a current employee of Merchants Tire Company, who is enrolled as a freshman within the College of Business Administration and demonstrates financial need, soundness of character and academic stability.

Scholarships are made available to students in the College of Nursing through a fund established by contributions from Northeastern University, Permanent Charities Fund, Massachusetts General Hospital, Children's Hospital Medical Center, Beth Israel Hospital, New England Deaconess Hospital, and Peter Bent Brigham Hospital. The application procedures and qualifications for selection are the same as those for all other scholarships.

A number of public utilities and power equipment manufacturing companies in the northeastern part of the United States have made available grants-in-aid ranging from \$1,000 to \$1,800 to assist able freshmen who are planning to undertake the six-year integrated cooperative program in power systems engineering leading to the degrees of Bachelor of Science and Master of Science in Electrical Engineering. These awards are made on the basis of academic achievement in high school and aptitude for and interest in the field of power systems engineering, without regard to financial need.

Candidates for such grants-in-aid should apply to the Dean of Admissions at Northeastern University not later than March 1 of the year in which they wish to enter the College of Engineering.

Secondary school students who reside in rural areas of New England, who have demonstrated superior achievement in their studies, and who are strongly endorsed by their principals and guidance counselors, may qualify for a Regional Scholarship. Scholarships range from \$200-\$1,400.

Refer to section on Reserve Officer's Training Corps.)

The George Raymond Fennell Memorial Scholarships
Business Administration

General Motors Scholarship
All Colleges

Charles Hayden Memorial Scholarships
All Colleges

The Edward L. Hurtig Scholarships
All Colleges

The Maurice A. and Nellie L. Idelson Award
All Colleges

Merchants Tire Company Scholarship Fund
Business Administration

College of Nursing Scholarships
Nursing

Power Systems Engineering Grants-in-Aid
Electrical Engineering

Regional Scholarships
All Colleges

Reserve Officers' Training Corps Scholarship Program

**Clinton H. Scovell
Scholarships**
Boston-Bouvé

Scholarships are made available annually to men and women students in Boston-Bouvé College through a fund provided by the will of Clinton H. Scovell.

**The Sidney L. Sholley
Memorial Scholarships**
All Colleges

The Sidney L. Sholley Memorial Scholarships have been established by the Trustees of the Keystone Charitable Foundation in memory of Mr. Sidney L. Sholley, founder and first president of the Keystone group of mutual funds. Two scholarships of \$600 each will be awarded annually to incoming freshmen. Recipients of the scholarships will be known as the Sidney L. Sholley Scholars.

Spofford Scholarship Fund
All Colleges

The Spofford Scholarship is awarded annually to an American Negro, American Indian, or multi-racial freshman who demonstrates severe financial need.

Trustee Scholarships
All Colleges

Established in 1928 by the Board of Trustees of Northeastern University, these full- and partial-tuition scholarships are granted in the Basic Colleges each year to entering freshmen who have demonstrated superior scholastic attainment throughout their preparatory or high school courses.

Western Electric Scholarships
Engineering

In 1973, Western Electric provided Northeastern University with a generous five-year grant, one-half of which is restricted for use as scholarship aid to first-year students admitted to or enrolled in the College of Engineering who demonstrate financial need and soundness of character. Western Electric Scholarships will be awarded through the academic year 1977-1978.

**SCHOLARSHIPS FOR
UPPERCLASSMEN**

**Dr. Martin E. Adamo
Scholarship**
Pharmacy

This scholarship of \$100 is given annually by the Boston Association of Retail Druggists in memory of Dr. Martin E. Adamo, the second president of the New England College of Pharmacy.

**The Vivian B. Allen
Scholarships**
Nursing

The Vivian B. Allen Foundation Endowment for nursing scholarships was established in 1968 through the generosity of the Vivian B. Allen Foundation, Inc. The income from a \$500,000 endowment fund is to be used to provide scholarship assistance for students entering or enrolled in the College of Nursing of Northeastern University. The application procedures and qualifications for selection are the same as those for all other scholarships.

**American Foundation for
Pharmaceutical Education
Scholarships**
Pharmacy

The Board of Grants of the American Foundation for Pharmaceutical Education provides three scholarships of \$200 each to be awarded to junior or senior students on the basis of scholarship and financial need with the understanding that the University will match the awards to the students selected. The use of the funds is restricted to the payment of tuition and laboratory fees.

**The Boston Section of the
American Society for Quality
Control Scholarship**
All Colleges

This annual award was established in 1961 by the Boston Section of the American Society for Quality Control to provide assistance to a student enrolled in a collegiate program which will prepare him for a constructive career in the broad field of quality control. The recipient must have completed his second year; and in his education or work experience, he must have demonstrated an interest in the broad field of quality control.

The Boston Section has an extensive educational program for those whose work requires an increasing knowledge of quality control, and it is active in enhancing the standards in this field.

**The Henry Francis Barrows
Scholarships**
All Colleges

Established in 1949, the four Henry Francis Barrows Scholarships provided under the will of Fanny B. Reed are offered to Protestant young men, born and brought up in New England. Good scholastic standing, good character and need must be demonstrated by recipients of the scholarships.

The Barry Scholarship
Engineering

The Barry Scholarship, established in 1973 by the Barry Division of Barry Wright Corporation, is available to students in the College of Engineering. Preference will be given to sons and daughters of Barry employees enrolled in Mechanical Engineering, based upon demonstrable financial need and academic achievement.

**The Mr. and Mrs. Emil
Matthew Bauer Fund**
All Colleges

The interest from the Fund, established in 1954, is used for scholarships or other financial assistance to students of German birth or of German

extraction studying at Northeastern University. The scholarships are available to either men or women students enrolled in any year at the University.

This program was established in 1957 by the Commonwealth of Massachusetts to provide scholarship aid to Massachusetts students pursuing full-time day schedules in accredited colleges. Awards are made in the fall of each year, and applications for upper-class students are available during April in the Office of the Director of Financial Aid for Students.

Established in 1966 by the Boston Paper Trades Association, Inc., this is an annual scholarship awarded to a junior or senior who has demonstrated by his cooperative work achievement and his extracurricular activities an interest and potential in the field of sales. The recipient must be of high character, have a good academic record, and be able to demonstrate financial need.

This scholarship, established in 1962, is to be awarded, in whole or in part to one or more chemistry or chemical engineering cooperative students on the basis of merit, need, scholarship, and personal qualifications. The Boston Rubber Group is sponsored by the Division of Rubber Chemistry, American Chemical Society.

In 1931 the Boston Society of Civil Engineers established a scholarship in memory of Desmond FitzGerald, a former president of the Society and an eminent hydraulic engineer with a distinguished record of service.

It has been awarded annually since 1931 to an outstanding Northeastern University senior or junior student in the Department of Civil Engineering of the College of Engineering. The presentation is made by the President of the Boston Society of Civil Engineers at the Society's annual meeting in the spring of the year.

These scholarships, two \$1,000 awards, are available to upper-class nursing students, with preference being given to residents of Brookline. Selection is on the basis of good academic standing and demonstrable financial need.

This scholarship was established in 1961 by Mr. Martin Brown, an engineering alumnus of the Class of 1921. The purpose of this scholarship is to assist qualified students enrolled in electrical engineering who have need and who have demonstrated above-average scholastic ability.

This fund provides financial assistance to worthy students of limited means without discrimination as to race, creed, color, or scholastic attainment. It was established in 1961 under the provisions of the will of George A. Burnham.

This Scholarship was established in 1973 by Camp, Dresser and McKee, Inc. and is available to students in all colleges. Preference will be given based upon demonstrable financial need and academic achievement.

Established by the Massachusetts CUNA Credit Union Association and friends of Mr. Cashman in recognition of his outstanding service to the credit union movement in the Commonwealth.

This scholarship is awarded annually to students in the College of Business Administration who have need with particular preference given to those enrolled in Banking and Finance.

This award, established by the members of the Publicity Club of Boston, is open to men and women of the junior and senior classes who demonstrate talent in the field of communications. The scholarship of \$100 bears the name of the second president of the Publicity Club (1950-1951) who fulfilled the role of an able and successful newspaper man.

To promote interest in the chemistry or chemical engineering field in New England, the Chemical Club of New England has made generous scholarships available to junior and senior students who are majoring in chemistry or chemical engineering and who show promise of success in either field. Recipients of these scholarships must be residents of New England and must have financial need, above-average grades, and a good cooperative work record.

The Civil Engineering Department Award was established by members of that department in order to recognize achievement and to give financial assistance to a student who has elected a major in the field of civil engineering.

Board of Higher Education Scholarships
All Colleges

The Boston Paper Trades Association, Inc., Scholarship
Business Administration

The Boston Rubber Group Scholarship
Chemistry, Chemical Engineering

Boston Society of Civil Engineers Scholarship in Memory of Desmond FitzGerald
Civil Engineering

Brookline Hospital Women's Auxiliary Scholarships
Nursing

Martin Brown Scholarship Fund
Electrical Engineering

Wellington Burnham Fund
All Colleges

The Camp, Dresser and McKee Scholarship
All Colleges

Louis S. Cashman Memorial Scholarship Fund
Business Administration

The William M. Cavanaugh Memorial Scholarship
All Colleges

Chemical Club of New England
Chemistry, Chemical Engineering

Civil Engineering Department Award
Civil Engineering

- ing. This award, in the amount of \$100, is financed by gifts from members of the Civil Engineering Department and is awarded to the recipient at the beginning of his sophomore year.
- Ruby H. Cole Scholarship Fund**
All Colleges
- The Ruby H. Cole Scholarship Fund was established in 1973 under the Will of Mrs. Cole, late of Boston, Massachusetts. The income from the fund is awarded annually to one or more female students enrolled in or admitted to undergraduate programs of the Basic Colleges of the University and who are graduates of Girls High School, Roxbury, Massachusetts. Recipients must demonstrate financial need, academic stability and soundness of character.
- The Compugraphic Corporation Scholarship Fund**
All Colleges
- The Compugraphic Corporation Scholarship Fund has been established and endowed at the University with a generous gift from an individual. The income from the scholarship fund is to be used annually as financial assistance for persons who are admitted to or enrolled in full-time undergraduate programs of the Basic Colleges of the University and who demonstrate financial need, academic stability and soundness of character. Scholarships will be tuition grants and will be awarded to persons who are otherwise eligible and who are, at the time of the grant, children of current employees of Compugraphic Corporation.
- Connecticut Alumni Rudolf O. Oberg Scholarships**
- Each year the Connecticut Alumni Club awards scholarships to students from the State of Connecticut who have achieved a high academic average in their freshman year and have demonstrated financial need. The scholarships are to be used toward the tuition expense of the sophomore year. These scholarships were established in 1958 to promote Northeastern University among the preparatory schools of Connecticut and in 1971 were named to honor Rudolf O. Oberg, the former Director of Alumni Relations.
- John W. Dargavel Foundation Scholarship**
Pharmacy
- This scholarship was established in 1964 by the John W. Dargavel Foundation, sponsored by the National Association of Retail Druggists. The award is limited to students who have completed their sophomore year in the College of Pharmacy and Allied Health Professions.
- The Cpl. James B. Downey USMC Scholarship Fund**
All Colleges
- This scholarship was established in 1970 through the generosity of Mr. William J. Downey, a graduate of the College of Liberal Arts, Class of 1952, in memory of his brother, Cpl. James B. Downey USMC. The scholarship is to be awarded annually to an upperclassman in the day colleges who has demonstrated the necessity for financial aid.
- Luis de Flores Endowment Fund**
All Colleges
- This fund was established in 1964 to provide yearly awards to students in recognition of superior ingenuity, irrespective of general academic standing.
- Agnes F. Driscoll Scholarship Fund**
All Colleges
- This fund will provide scholarship assistance to students in their upper-class years who have demonstrated financial need and scholastic attainment.
- Electrical Manufacturers Representatives Club of New England, Inc., Scholarship**
Electrical Engineering
- Established in 1958, this scholarship of \$475 is granted to a student or students majoring in electrical engineering, without regard to race, creed or color. To qualify, students must have real financial need and excellent scholastic standing.
- Carl Stephens Ell Alumni Scholarships**
Elmer H. and Daisy M. Everett Scholarship
- (For description of these two scholarships, see page 182.)
- Clara and Joseph F. Ford Scholarship Fund**
All Colleges
- A fund established by Clara and Joseph F. Ford to provide tuition scholarships for worthy, needy, and well-qualified students who have demonstrated a democratic and tolerant spirit and who are well disposed toward people of all creeds and races.
- Gilman Brothers Inc. Scholarship**
Pharmacy
- This scholarship of \$250 is given annually by Gilman Brothers, Inc. to help a student further his education in pharmacy.
- Rabbi Myer O. Grunberg Scholarship**
All Colleges
- Established in 1953 by Mrs. Myer O. and Miss Rose Grunberg, this annual award is available to a senior student in any college of the University. The award is made to that man or woman student who has evidenced in personal, business, and student relations those characteristics of leadership and human relations which make for a better social order. There is no restriction as to race, creed, color or sex.

(See section describing Federal Programs.)

This fund was established in memory of Walter F. Howe, Class of 1968, who within one week after graduation was fatally wounded in pursuit of living up to his ideals of good citizenship and civic responsibility. Walter was tragically slain while pursuing thieves who had stolen his landlord's car. The scholarship was established through the generosity of Walter's friends and relatives and is awarded annually to a student in the College of Business Administration who demonstrates not only financial need but good citizenship and civic responsibility. The scholarship is open ended so that additional sums can be added to it in future years and will be awarded by the University without restrictions as to race, color, geographic origin, or scholastic attainment.

Established in 1968 by the will of the late Joseph Anthony (Johansen) Johnson of the Class of 1928, the income provides scholarship aid for students enrolled in the Department of Mechanical Engineering, with preference given to students of Scandinavian origin.

These scholarships are provided through the income of a fund established in 1963 by Horatio W. Lamson in memory of his beloved wife. The scholarships are awarded annually to needy and worthy students who are enrolled in any of the Basic Colleges of the University. The scholarships are granted by the Committee on Financial Aid of the University without regard to national origin, sex, race, or creed.

This fund was established in 1972 through the generosity of Irving Landfield, a graduate of the School of Commerce and Finance of Northeastern University, Class of 1923. The income from the fund is to be awarded annually to help deserving and needy students who demonstrate a desire to fulfill the limits of their ability in academic and cooperative periods of study. The income from this fund will be administered and awarded by the University without restriction as to race, color, creed, geographic origin, or scholastic attainment. It is Mr. Landfield's desire that recipients of the scholarship assume a moral obligation to contribute to the principal of this fund as they may be able, in order to make additional financial aid available to other students in later years.

This scholarship fund was established in 1957 in memory of Dr. Avrom Aaron Leve, former Assistant Professor of Psychology. The interest is used annually to provide scholarships for upper-class students majoring in psychology. The award is made on the basis of academic achievement, financial need, and character.

The Dr. Reuben J. Margolin Memorial Scholarship Fund was established in 1973 through the generosity of family and friends of Dr. Reuben J. Margolin, an outstanding and dedicated individual and friend who, at the time of his death on April 6, 1972, was Chairman of the Department of Rehabilitation and Special Education at Northeastern University.

The income from the Dr. Reuben J. Margolin Memorial Scholarship Fund is awarded annually to a deserving student admitted to or enrolled in the College of Education or the Graduate School of Education and majoring in Rehabilitation and/or Special Education. Recipients must demonstrate financial need as well as the personal and professional qualities exemplified by Dr. Margolin.

This fund was established in 1961 under the provisions of the will of George T. Marvin, a graduate of the Northeastern University School of Law, Class of 1918. Mr. Marvin designated that the income of this fund should be used to provide financial assistance to worthy and needy students to assist them in furthering their education at Northeastern University.

George T. Marvin Scholarships may be awarded to new students seeking admission to Northeastern and to students enrolled as freshmen and upper-classmen. Applicants must have satisfactory records of scholarship as of the time of making application and must demonstrate genuine need and good citizenship.

This scholarship of \$200 established by the Massachusetts State Pharmaceutical Association is awarded annually. The recipient must be a resident of Massachusetts.

**Health Professions
Scholarship Program**
Pharmacy

**The Walter F. Howe Memorial
Scholarship**
Business Administration

**Joseph Anthony Johnson
Scholarships**
Engineering

**Vena Morse Lamson
Scholarships**
All Colleges

**The Irving Landfield
Scholarship**
All Colleges

**Avrom Aaron Leve Memorial
Scholarship**
Psychology

**Dr. Reuben J. Margolin
Memorial Scholarship Fund**
Education

**George T. Marvin Scholarship
Fund**
All Colleges

**Massachusetts State
Pharmaceutical Association
Scholarship**
Pharmacy

- The Massachusetts State Pharmaceutical Association also awards a number of scholarships of \$100. Applications for these scholarships may be secured from the office of the Association at 11 Beacon Street, Boston.
- McKesson & Robbins, Inc.,
Scholarship
Pharmacy** This scholarship of \$200, given annually by McKesson & Robbins, Inc., is awarded to a worthy student in financial need.
- Frederick W. Muckenhaupt
Scholarship
All Colleges** This award was established in 1961 by Dr. and Mrs. Carl F. Muckenhaupt in memory of their son, Frederick W. Muckenhaupt, Class of 1959 of the College of Engineering.
The award is to be made annually to a student in good standing on the basis of need. Preference is given to a student enrolled in the Department of Electrical Engineering.
- The New England Paper
Merchants, Inc., Scholarship
All Colleges** Established in 1959 by the New England Paper Merchants Association, Inc., this is an annual scholarship awarded to a junior or senior who has demonstrated by his cooperative work achievement and his extracurricular activities an interest and potential in the field of sales. The recipient must be of high character, must be able to demonstrate financial need, and must have a good academic record.
- Norfolk County
Pharmaceutical Association
Scholarship
Pharmacy** This scholarship of \$50 is awarded annually to a student who meets the requirements both financially and scholastically and is a resident of one of the member towns covered by the Norfolk County Pharmaceutical Association (Norwood, Dedham, Canton, Walpole, Millis, Needham, Westwood, and Islington).
- Pilot Freight Carriers
Scholarship
Business Administration** The Pilot Freight Carriers Scholarship is awarded annually to an upper-class student of Business Administration who has achieved an outstanding academic record and who is interested in a career in the field of transportation. The amount of this award is \$500.
- The Mildred A. Reardon
Scholarship Award
All Colleges** Delta Pi Alpha Sorority sponsors an annual award of \$100 to a deserving coed in the Basic Colleges. Selection is made by the Dean of Women on the basis of financial need and academic standing. The award is given in honor of an outstanding alumna of Northeastern and Delta Pi Alpha, whose academic excellence, strength of character, and qualities of leadership have typified the ideal for which the sorority strives.
- The Gay Miller Reese
Memorial Scholarship
Boston-Bouv  College** The Gay Miller Reese Memorial Scholarship was established in 1971 by Everett Reese, in memory of his wife, and by members of the Class of 1921 at their 50th Reunion in honor of their classmate and Class President, Gay Miller Reese. This scholarship is to be awarded annually to help a well-qualified upper-classman in Boston -Bouv  College acquire the education he or she could not otherwise afford. The recipient of this award will be selected by the Committee on Scholarships.
- Frank B. Sanborn
Scholarship Fund
Engineering** The Frank B. Sanborn Scholarship Fund was established in 1958 to provide a scholarship or scholarships of not more than \$500 to worthy and needy students selected by the University, without restrictions as to race, creed, or geographic origin, but with preference being given to students majoring in electrical, mechanical, civil, or industrial engineering, in the order stated.
Each recipient must be willing to assume a moral obligation to reimburse the fund as he may be able, in order to make similar financial aid available for other students in later years. There shall be no interest charged and no time specified for reimbursement.
- Clinton H. Scovell
Scholarships
Boston-Bouv ** Scholarships are made available annually to students in Boston-Bouv  College through a fund provided by the will of Clinton H. Scovell.
- John Stuart Sousa, Jr.
Memorial Scholarship Fund
Pharmacy** This scholarship was established in 1968 in memory of John S. Sousa, Jr., of Fall River, Massachusetts, a student in the College of Pharmacy, Class of 1969, by his family and friends. The scholarship is awarded annually with selection preference given to a male student entering his senior year in the College of Pharmacy and Allied Health Professions who has obtained a cumulative quality point average of 2.300, demonstrates financial need, participates in extracurricular activities and preferably is a member of a fraternity.

The fund was established in 1947 by Farnham Wheeler Smith, Class of 1924, Benjamin Lincoln Smith, Class of 1923, Thomas Hollis, Jr., Class of 1941, and other members of the family in honor of Dr. William Lincoln Smith, who served long, faithfully, and with distinction as Chairman of the Department of Electrical Engineering at Northeastern University.

The income from the fund is used for an annual scholarship award to a student enrolled in the Department of Electrical Engineering who has demonstrated excellence in some aspect of electrical research, stands high in his courses, or otherwise exhibits promise of future competence in the field. The award shall preferably be granted to a student who needs financial assistance to continue his college work.

This tuition scholarship of \$100 established in 1960 is awarded annually to a pharmacy student enrolled in the third, fourth, or fifth year who is in good scholastic standing and in financial need, and living in the area covered by the South Middlesex Pharmaceutical Association (Arlington, Belmont, Lexington, and Watertown). The recipient will be selected by the scholarship Committee.

The Scholarship Committee of the Association will select a freshman student in June of each year living in the area covered by the South Shore Pharmaceutical Association (Quincy, Braintree, Weymouth, Hull, Randolph, Dighton, Holbrook, and Cohasset) who will be awarded a \$100 scholarship to be applied to the tuition of the first semester of the sophomore year.

A scholarship of \$100 is offered by the Springfield Druggists' Association. This is to be awarded to a sophomore or junior who maintains the highest average in the Department of Pharmacy, and who is worthy and in need of financial assistance. The Springfield Druggists' Association Scholarship Fund was established in 1956.

This fund was established in 1959 by members of the Class of 1919 and alumnae of the Bouvé-Boston School in honor of their classmate, Miss Ruth Page Sweet, dean of the school from 1929 to 1946, administrative director from 1946 to 1948, and director from 1948 to 1958. The scholarship is presented to a junior or senior who has demonstrated by his or her academic record and extracurricular activities a high level of professional promise.

This fund is in memory of A. Gilbert Tenney, who served as a captain in the Air Force during the Korean War and was killed while in active service. The income from the fund will be awarded to a needy student or students in the field of electrical engineering, studying under the Cooperative Plan Education.

This fund was established in 1972 through the generosity of the members of the Class of 1931 in memory of their faculty adviser, Eliot F. Tozer. The scholarship is awarded annually to students of proven need in the middle, junior or senior classes of the day Colleges of Engineering or Business Administration. The scholarship is open ended so that additional sums can be added to it in future years. It will be administered and awarded by the University without restrictions as to race, creed, geographic origin, or scholastic attainment.

Numerous scholarships have been given yearly since 1950 to students demonstrating financial need, high academic achievement, and an active interest in University life as shown by participation in one or more major activities. Students are named as recipients of Travelli Scholarships at the completion of their sophomore year. Under normal circumstances these awards will continue through the senior year.

This fund was established in 1960 by Mrs. Samuel Ulman in memory of Samuel Ulman, a student at Northeastern University from 1912 to 1915. The purpose of the fund is to provide scholarship assistance to students of good academic standing who have financial need.

The Uniroyal Foundation has established scholarships to be awarded to students in the Colleges of Engineering, Business Administration, and Liberal Arts who qualify on the basis of leadership and character, academic performance and potential, need for financial assistance, and demonstration of interest in a career in industry.

**William Lincoln Smith
Scholarship Fund**
Electrical Engineering

**South Middlesex
Pharmaceutical Association
Pharmacy**

**South Shore Pharmaceutical
Association Scholarship
Pharmacy**

**Springfield Druggists'
Association Scholarship
Pharmacy**

**Ruth Page Sweet
Scholarship Fund**
Boston-Bouvé

**A. Gilbert Tenney
Scholarship Fund**
Engineering

**The Eliot F. Tozer Memorial
Scholarship**
Business Administration and
Engineering

**Charles Irwin Travelli
Scholarships**
All Colleges

**Samuel Ulman
Scholarship Fund**
All Colleges

**Uniroyal Foundation
Scholarships**
Engineering, LA, BA

Recipients assume a moral obligation to repay at least 25 percent of any scholarship received to the University Scholarship Fund after graduation. Students must have completed at least two years of their undergraduate program to be eligible.

University Scholarships
All Colleges

Northeastern University has for many years maintained a scholarship fund for deserving, qualified students. These scholarships are awarded on the basis of need, scholastic standing, and campus citizenship. The recipient of a Northeastern scholarship must be willing to assume a moral obligation to repay the University at some future date.

**Sabestino Volpe
Scholarship Fund**
Engineering

The Sabestino Volpe Scholarship Fund was established in 1972 through the generosity of Mr. Sabestino Volpe, a distinguished alumnus of the College of Engineering and a member of the Class of 1928. The income from the fund is awarded annually as a scholarship to an upper-class student enrolled in the Civil Engineering degree day program within the College of Engineering. Recipients must demonstrate financial need, academic stability and soundness of character.

Henry E. Warren Scholarships
All Colleges

Established in 1958 by the Warren Benevolent Fund, Inc. The purpose of these scholarships is to encourage students to gain cooperative work experience reinforcing study in their major field.

Scholarship awards in the total amount of \$1,000 are awarded annually without restrictions as to race, creed, or national origin, to upper-class students in fields in which related cooperative work positions are few and poorly paid. The recipients of the scholarship must have demonstrated good scholastic standing, fine character, and financial need.

**The Jacob Wasserman
Scholarship Fund**
Pharmacy

Established in 1966 by his friends in memory of Jacob Wasserman, the fund is to provide scholarship aid to a senior student in the College of Pharmacy and Allied Health Professions. The award will be made annually on the basis of financial need, academic performance, and personal qualities.

**Western Electric Fund
Scholarship Award**
Engineering

This scholarship, established in 1956, is awarded annually to an upper-class student in mechanical, electrical, or industrial engineering. The recipient must be an outstanding student who also has financial need. The Western Electric Company is the manufacturing company for the Bell Telephone System.

**STATE SCHOLARSHIP
PROGRAMS**

The Office of Financial Aid strongly advises aid applicants to apply for state scholarship programs at the same time that they apply for aid from the University.

The Commonwealth of Massachusetts provides scholarship aid to Massachusetts students pursuing full-time day programs of study in an accredited college or university. Awards are made in the summer of each year, and applications for entering freshmen are available in December through the high school guidance office. Out-of-state students should investigate aid programs in their respective states also. Substantial state aid is offered by Connecticut, New Jersey, Pennsylvania and Rhode Island.

Honor Societies and Academic Awards

The University encourages the achievement of excellence in scholarship by making monetary awards and chartering honor societies in the various academic disciplines.

Honor Societies

Eighteen honorary societies are chartered in the Colleges:

- Academy—in the College of Liberal Arts
- Alpha Kappa Delta—in the College of Liberal Arts, Sociology Department
- Alpha Pi Mu—in the College of Engineering, Department of Industrial Engineering
- Beta Alpha Psi—in the College of Business Administration, Accounting Concentration
- Beta Gamma Sigma—in the College of Business Administration (Massachusetts Delta Chapter)
- Boston-Bouvé Honor Society—in the College, all Departments
- Epsilon Chi—in the College of Engineering, Department of Civil Engineering
- Epsilon Phi Alpha—national German honor society
- Kappa Nu—in the College of Engineering, Department of Electrical Engineering (Gamma Beta Chapter)
- Kappa Delta Pi—in the College of Education
- Kappa Chi Epsilon—in the College of Engineering, Department of Chemical Engineering
- Kappa Alpha Theta—in the College of Liberal Arts, Department of History (Northeastern Zeta Tau Chapter)
- Kappa Phi—national interdisciplinary honor society
- Kappa Sigma—in the College of Liberal Arts, Department of Biology
- Kappa Sigma Alpha—in the College of Liberal Arts, Department of Political Science (Northeastern Delta Gamma Chapter)
- Kappa Tau Sigma—in the College of Engineering, Department of Mechanical Engineering (Northeastern Tau Kappa Chapter)
- Kappa Chi Society—in the College of Pharmacy and Allied Health Professions (Beta Tau Chapter)
- Kappa Beta Pi—in the College of Engineering (Massachusetts Epsilon Chapter)

Election to the college honorary societies is based primarily on scholarship, but, before a man or woman is privileged to wear the honorary society insignia, there must be evidence of an integrity of character and an interest in the extracurricular life of the University. The societies have memberships consisting of the outstanding men and women in the Colleges. Election to an honorary society is the highest honor that can be conferred upon an undergraduate.

HONORS AND AWARDS

Awards for Upperclassmen

University awards are determined by scholastic and citizenship achievement. They are presented by appropriate committees headed by the Dean of Students and do not require a demonstration of financial need for formal application.

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| <p>The Academy Award
Liberal Arts</p> | <p>The Academy, the honor society of the College of Liberal Arts, offers annually an award of \$100 to the sophomore in the College of Liberal Arts who, during the previous year as a freshman, made the highest scholastic record.</p> |
| <p>William Jefferson Alcott, Jr., Award</p> | <p>This award of \$200 was established in 1934 by members of the faculty and other friends to perpetuate the memory of William Jefferson Alcott, Jr., a brilliant member of the Northeastern Department of Mathematics from 1924 until his death in 1933. The award to a senior is made annually from the income of the fund "for outstanding performance, either in the way of unusual excellence in routine work, or in connection with some intellectual activity outside or beyond the requirements of the curriculum."</p> |
| <p>Alumni Awards for Professional Promise
All Colleges</p> | <p>Established in 1947 by the Alumni Association, these awards are presented annually at a final senior class meeting in the spring of the year. The awards are made to the outstanding seniors in each of the Basic Colleges who have demonstrated unusual professional promise through their character traits, scholastic achievement, and cooperative work performance.</p> |
| <p>Beta Alpha Psi</p> | <p>"The purposes of this fraternity shall be: To instill in its members desire for self-improvement; to foster high moral and ethical standards in its members; to encourage and give recognition to scholastic and professional excellence; to cultivate a sense of responsibility and service in its members; to promote the collegiate study of accountancy; and to provide opportunities for association among its members and practicing accountants."</p> |
| <p>The Beta Gamma Sigma Society Award
Business Administration</p> | <p>"The purpose of this society shall be to encourage and reward scholarship and accomplishment among students of business administration, to promote the advancement of education in the art and science of business and to foster integrity in the conduct of business operations."</p> <p>Election to membership in Beta Gamma Sigma is the highest scholastic honor that a student in business administration can win.</p> <p>The Massachusetts Delta Chapter of Beta Gamma Sigma, the national honorary society of colleges of business administration, offers an annual scholarship of \$100 to the sophomore in the College of Business Administration who, during the previous year as a freshman, made the highest scholastic record.</p> |
| <p>Boston-Bouvé Honor Society Awards
Boston-Bouvé</p> | <p>The society offers an annual award of \$100 to the sophomore in Boston-Bouvé College who, during the previous year as a freshman in the College, made the highest scholastic record. Each student voted into the Society receives an engraved certificate at a special Honors Assembly.</p> |
| <p>Cooperative Education Awards
All Colleges</p> | <p>These awards are presented to seniors in each of the Basic Colleges in recognition of outstanding performance in the Cooperative Education Program, through which they have personified the objectives and ideals of the University. The awards are presented at the Annual Awards Luncheon.</p> |
| <p>Sears B. Condit Honor Awards
All Colleges</p> | <p>These awards were established in 1940 through the generosity of Sears B. Condit. At Honors Day Convocation, Sears B. Condit Honor Awards, approximately 40 in number, are awarded annually to outstanding students in the senior class. Each award carries a stipend of not less than \$150 as well as a certificate of achievement.</p> |
| <p>Alfred J. Ferretti Award
Engineering</p> | <p>Tau Kappa Chapter of Pi Tau Sigma, the Mechanical Engineering National Honor Fraternity, sponsors an annual award to the sophomore mechanical engineering student at Northeastern having the highest scholastic standing. The award is named in honor of Professor Ferretti, who retired June 30, 1961, after 43 years of service to the University.</p> |

Academic Awards / 193

The Ford Awards are made to students who have demonstrated a democratic and tolerant spirit and who are well disposed toward people of all creeds and races. They are chosen from the senior class, and judged on the basis of their contributions through participation or leadership and their extra-curricular organizations. Students must have demonstrated by their actions that they are particularly tolerant and willing to work with and for other people.

Established in 1954, the Harold D. Hodgkinson Achievement Awards of \$500 each are granted annually to a senior student in Division A and Division B. The winners of the awards are known as the Hodgkinson Scholars for the year in which they are chosen.

The award is based primarily upon distinguished scholastic achievement with due consideration of character, personality, qualities of leadership, cooperative work experience, military record (if any), and service in voluntary organizations and activities. Student leadership accomplishments and professional potential are evaluated in connection with these criteria.

The Hodgkinson Scholar is chosen by a committee of administrative members of the faculty. An appropriate certificate is presented to each recipient as a permanent record of his selection.

Kappa Delta Pi, the College of Education honor society, offers an annual award of \$100 to the education sophomore who, during the freshman year, achieved the highest scholastic record.

The Lilly Achievement Award is given to a graduating senior for superior scholastic and professional achievement. Leadership qualities, professional attitudes, and academic performance will be considered in the selection of the individual for this award.

This annual \$100 award was established in 1960 by William Lovinger for the purpose of giving assistance to a student of acceptable scholastic standing who can demonstrate financial need.

This award was established in 1953 by the Boston accounting firm of Robert Lubets & Company to recognize outstanding professional development and personal growth by students training for careers in accounting. One hundred dollars will be awarded to that degree candidate who at the completion of his junior year has demonstrated the greatest personal growth and professional development as evidenced by his improvement in scholastic achievement accompanied by professional aptitude indicative of future success as an accountant.

This fund was established in 1959 by Thomas E. Phalen, Jr., a member of the faculty, in memory of his wife. The income from this fund is used yearly as a cash award to a senior, junior, or middler, preferably in the College of Engineering, who maintains at least a 2.0 academic average, shows outstanding ability in one or more varsity sports, and demonstrates excellent campus citizenship.

Phi Sigma, honor society in the Department of Biology, offers an annual award of \$50 to the junior or senior majoring in biology or a related science who demonstrates the greatest research potential. To qualify for the award, the student must be a member of Phi Sigma.

This fund was established in 1953 by colleagues and friends of the late Professor Roland G. Porter, for many years head of the Department of Electrical Engineering. Interest from the fund provides an annual award to a student in the Department of Electrical Engineering who best exemplifies the qualities of mind and character which Professor Porter did so much to develop in his lifetime.

Since 1929, at the annual Honors Day Convocation, four awards of \$100 each, known as the President's Awards, have been presented to the students with the outstanding records in the sophomore, middler, junior, and senior classes.

The Massachusetts Epsilon Chapter of Tau Beta Pi offers annually an award of \$50 to the outstanding middler in the College of Engineering. The award is based upon outstanding scholarship, breadth of interest, and contribution to the University. All middlemen with a 3.5 average or above are eligible;

Clara and Joseph F. Ford Awards
All Colleges

The Harold D. Hodgkinson Achievement Awards
All Colleges

Kappa Delta Pi Award
Education

The Lilly Achievement Award
Pharmacy

Julia and Merrill Robert Lovinger Award
All Colleges

Robert Lubets Award
Business Administration

Ruth E. Phalen Memorial Award Fund
All Colleges

The Phi Sigma Society Award
Liberal Arts

Roland Guyer Porter Memorial Fund
Electrical Engineering

President's Awards
All Colleges

The William Rand Award
Engineering



and the winner is chosen after careful screening and interviews with members of the chapter.

ROTC Awards
ROTC

Awards totaling \$1,000 are available to ROTC cadets each year. The University offers ten \$50 awards annually. They are—four to sophomores, four to middlers, and two to juniors.

Scabbard and Blade (the cadet officers' honorary society) offers one award annually to middlers. The Pershing Rifles (the basic course honorary society) offers a \$50 award to a sophomore Pershing Rifles cadet.

Academic Achievement Awards are won by each cadet in the top 10 percent of ROTC classes. This award, a wreath, is worn above the right breast pocket of the uniform during the year immediately following. Leadership Achievement Awards, consisting of letters of commendation, are awarded to each cadet in the top 10 percent in leadership potential.

Many medals and trophies are also awarded by other organizations to ROTC cadets for achievements in diverse fields.

Tau Beta Pi Award
Engineering

Massachusetts Epsilon Chapter of Tau Beta Pi Association, national honorary society in engineering, offers annually a scholarship of \$100 to the sophomore in the College of Engineering who, during the previous year as a freshman, made the highest scholastic record.

Woman of the Year Award
All Colleges

The women's societies of the University sponsor an annual scholarship of \$100 to the senior woman student who, by high scholastic attainment and by demonstration of the quality of leadership, has proven herself the outstanding woman student of the year.

Housing

Dormitories are available for students who prefer residence halls. Students may reside where they wish, but dormitory housing is especially recommended for the freshman year. All dormitories are located close to the campus. They are easily accessible to Northeastern's Library, Student Center and Physical Education facilities.

All dormitories have lounge areas and recreation rooms including television.

Dormitory living offers ample opportunity for social and educational activities. Student committees have been established in areas concerning study hours, visitation privileges, security, food planning, and so forth.

An effort is made to insure privacy and a quiet environment conducive to study; however, students must recognize that dormitory living cannot always provide the same privacy and quiet one may enjoy at his own home.

Each dormitory is staffed with a residence director and students who serve as residence assistants or dormitory counselors.

All students requesting University housing are required to sign a housing contract with the University. By requesting University housing and signing the contract, a student commits himself to the dormitories for the entire freshman year.

Students are encouraged to visit the University early in order to assist them in making their decision regarding housing. The responsibility of arranging off-campus housing rests with the student and his family. Those students within commuting distance should be certain as to their housing plans for the year before signing the contract.

Freshmen living in dormitories are not allowed to have cars or other powered vehicles on campus.

Upper-class and transfer students may live in the dormitories or upper-class apartments depending upon available space.

The dormitories are designed to house anywhere from two to six students in one area. Some of the larger rooms house three men, while dormitory "group areas" house a total of six men in two or three rooms. All women's dormitories offer rooms for a maximum of two students.

Tours of the residence halls are available. Arrangements for these tours can be made by contacting the Department of Admissions.

Specific room assignments will be made after receipt of the dormitory deposit and a signed housing contract. Special requests for room assignments will be honored where possible, on a first-come, first-served basis.

The dormitories and the quarterly room and board rates (3 meals per day) are as follows:

RESIDENCE REQUIREMENTS

Upper-class Students

Tours

Room Assignments



Speare Hall — female	\$500.00
Stetson Hall — female	\$500.00
Smith Hall — female	\$485.00
Light Hall — male	\$485.00
White Hall — male	\$485.00
Melvin Hall — male	\$485.00
96 The Fenway — male	\$485.00
153 Hemenway — coed	\$460.00
115 Hemenway — male	\$460.00
119 Hemenway — male	\$460.00

All rates are subject to change.

Food Plan Presently the food plan is a dormitory requirement. Twenty-one meals are served each week.

Coed Housing This is the first year Northeastern University has had a coeducational dormitory. As space is limited, students who have not previously lived in standard Northeastern University dormitories are not eligible to be housed at 153 Hemenway, which is the coed dormitory. The dormitory houses men and women in separate suites with separate lavatory facilities. Lounge areas, laundry rooms, and television areas are shared.

Apartments for Male and Female Upper-class Students The University maintains an apartment housing unit at 106 to 122 St. Stephen Street, which accommodates about 256 upper-class students. Two, three, and four-student apartments are available which vary in size from one, two or three rooms plus bath, and kitchen. Apartments are fully furnished with beds, chairs, desks, stoves, refrigerators, and kitchen table. The cost is \$240.00 per quarter payable at the beginning of the term. The cost includes all utilities, but again, costs are subject to change.

A \$50.00 deposit is required when making application for the upper-class apartments. Applications are available in the Office of University Housing. Students are expected to make such arrangements on a term-to-term basis but may live in the apartments both while on cooperative work assignments and in school if they wish. All reservations are made on a first-come, first-served basis.

Certain fraternities provide opportunities for room and board for men at reasonable rates. Information regarding these housing facilities may be obtained from the Office of University Housing, 122 St. Stephen Street, Boston, Mass. 02115.

Students are free to make their own housing plans without receiving permission or approval from the University. The local address of all students must be on file with the Registrar's Office. It is important for the University to know the current address of all students in case of emergency situations.

Fraternity Housing

Regulations Concerning Off-Campus Housing



Student Activities

Northeastern University regards student activities as an integral part of its three-fold educational program along with academic and cooperative education. The purpose of the Northeastern activities program is to provide all students with a variety of opportunities for experience, training, recreation, and spare-time interests. By participating in activities, students add to their education and personal development, build up assets which may be as important upon graduation as their academic record, and make a significant contribution to the University.

More than 130 varieties of student activity are conducted regularly. These include clubs, fraternities, sororities, religious groups, honor societies, publications, musical organizations, drama groups, societies for women students, professional societies and student government groups. Most of these activities are open to freshmen.

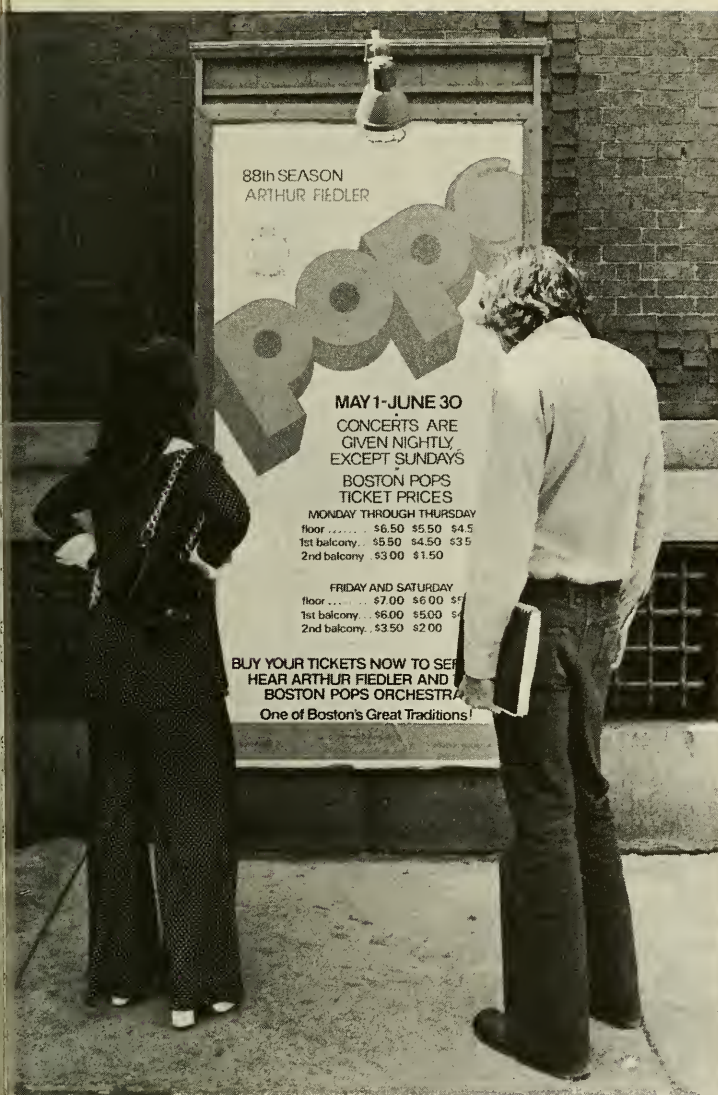
On Mondays and Thursdays, from 11:45 A.M. to 1:35 P.M., time is reserved exclusively for student activities. No classes are scheduled during this period.

The importance which Northeastern places on student activities is not only shown by the regular hours set aside for participation, but also by the extension of the advisory system to the program. In our system of cooperative education, the adviser of an organization maintains continuity and liaison between divisions and establishes an essential reference position for all students. The role played by the adviser often has considerable bearing on the success or failure of an organization, and on important public relations and attitudes.

The adviser does not determine policy for the organization. His title should be taken literally, and his expertise can only help to enhance the organization.

Since its opening in the Fall of 1965, the Carl S. Ell Student Center has become the students' favorite meeting place on campus. Open seven days a week, the Student Center provides lounges, meeting rooms, study areas, recreational facilities, and a cafeteria for the full use of the student body. Although many of the rooms are designed to serve multiple purposes, the following facilities are included: little theatre and drama rehearsal room; music practice and rehearsal rooms; exhibition areas; student organization offices; publication areas and a student radio station; meeting rooms; a TV room; and a variety of recreational facilities including pocket billiards, ping pong, chess and checkers.

With all of these facilities available, and with a full student activities schedule that includes concerts, distinguished speakers, movies, plays, and dances, the Northeastern student never becomes bored.



Coupled with our on-campus activities, being located in Boston gives the Northeastern student the opportunity to visit the many storical landmarks, as well as the great cultural centers in the area including the famous Museum of Fine Arts and Symphony Hall, home of the world-renowned Boston "Pops."

Special Interest Groups*All-University Activities*

Distinguished Speakers Series
 Husky Key
 Radio Station WRBB-FM
 Student Center Committee
 Student Council
 Student Union

Artistic Organizations

Art Club

Dance Theatre

Silver Masque

Educational Organizations

American Students for Israel
 Computer Club
 Debate Council
 Economics Society
 German Club
 Health Education Majors' Club
 History Club
 International Students' Forum
 Medical Technology Club
 Music Therapy Club,
 Recreation Education
 Department
 Objectivism Study Group
 The Philosophy Forum
 Physical Education Majors'
 Club
 Physical Therapy Club

Musical Organizations

Chamber Orchestra
 Early Music Players
 Ethnomusicological Society
 N. U. Band
 N. U. Chorus
 ROTC Band

Political and Social Action Organizations

Chinese Students' Club
 Contact Phone
 Ecology Coalition
 N. U. Female Liberation
 Progressive Labor Party
 Students for a Democratic
 Society
 University Forum
 Vietnam Veterans Against the
 War
 Young Americans for Freedom
 Young Democrats

Publications

Cauldron

Northeastern News

Spectrum





Recreational Organizations

Camera Club
 Chess Club
 Film-making Club
 Hus-Skiers and Outing Club
 Karate Club
 Model Railroad Club
 Radio Club
 Rifle Club
 Sport Parachute Club
 Sports Car Club
 Underwater Society
 Table Tennis Club
 Women's Athletic and
 Recreational Association
 Wrestling Club
 Yacht Club



Religious Organizations

Baptist Fellowship
 Canterbury Club
 Catholic Students Association
 Christian Prayer Group
 The Christian Science
 Organization
 Congregational Club
 Hillel Counselorship
 Intersity Christian
 Fellowship
 Lutheran Club
 Nichiren Shoshu of America
 N. U. Overcomers
 Phanar (Greek Orthodox)
 Presbyterian Club
 Unitarian Universalist Club
 Wesley Club (Methodist)



Fraternities The 15 recognized fraternities at Northeastern (six local and nine national) play an important part in the life of the University. Membership is by invitation, and bids are extended by the fraternity to freshmen during their first and second quarter. Smokers, dances, and socials for freshmen are held with the object of pledging. The fraternities are:

Alpha Epsilon Pi (national)—Brookline
 Alpha Kappa Sigma—Jamaica Plain
 Beta Gamma Epsilon—Boston
 Delta Chi (national)—Jamaica Plain
 Delta Sigma Theta (national)—Boston
 Gamma Phi Kappa—Boston
 Nu Epsilon Zeta—Brookline
 Phi Beta Alpha—Boston
 Phi Gamma Pi—Brookline
 Phi Kappa Tau (national)—Jamaica Plain
 Phi Sigma Kappa (national)—Jamaica Plain
 Rho Pi Phi (national)—Boston
 Sigma Alpha Mu (national)—Boston
 Tau Kappa Epsilon (national)—Allston
 Zeta Beta Tau (national)—Jamaica Plain

The Interfraternity Council coordinates activities of these groups.

Intramural Sports The intramural sports programs for men are organized to permit students to participate as members of a sports club, as members of a team, or as individuals on a nonteam, "drop-in-and-participate" basis. Sports activities are scheduled according to seasonal interests, and include aquatics, badminton, basketball, boxing, gymnastics, handball, jogging, judo, track, volleyball, and weight and training.

WOMEN'S The Women's Athletic and Recreation Association has, as its prime purpose, the promotion of activity opportunities of an athletic and recreational nature for all undergraduate women students. Throughout the year, intramurals and club participation are possible in badminton, basketball, fencing, field hockey, golf, gymnastics, lacrosse, modern dance, speed swimming, synchronized swimming, tennis, and volleyball. Varsity athletic teams for women include basketball, fencing, field hockey, lacrosse, swimming, diving, tennis, and volleyball. Other activities may be offered when warranted by student interest and availability of facilities.

Organizations for Women Students All women students are eligible to join the women's society, Omega Sigma. Through meetings and social functions, this society works to promote greater friendliness and unity among women students.

Sororities

Alpha Sigma Tau (national)
 Alpha Omicron Pi (national)
 Delta Phi Epsilon (national)
 Lambda Delta Phi (national)

Special Interest Groups

Cheerleaders
 Dance Theatre (open to men and women)
 Modern Dance Group

Students will benefit in many ways by joining the student chapter of a professional society in an area of study of particular interest to them. They will keep up with latest developments by listening to authorities in that field; they will have the opportunity to exchange ideas with students from other colleges and universities as well as from Northeastern; and they will learn more about professional standards.

If students take an active part by attending regular meetings and social affairs, they may become an officer of a representative member of a delegation to meetings outside the University. Such participation may prove invaluable in shaping a career.

The following professional societies are open to upperclassmen in their respective professional fields. The majority are national organizations.

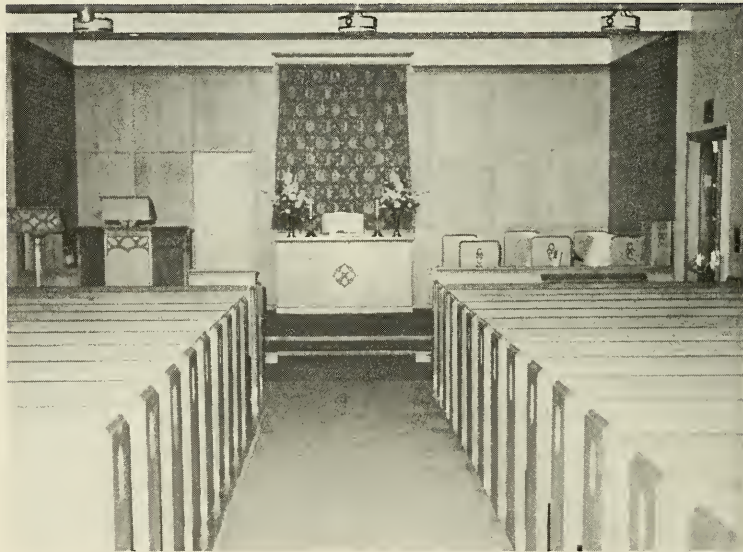
Professional Societies

Accounting Society (local)
 Advertising Club (local)
 Alpha Zeta Omega (Pharmacy)
 American Association for Health, Physical Education and Recreation
 American Chemical Society
 American Finance Association
 American Institute of Chemical Engineers
 American Institute of Industrial Engineers
 American Institute of Physics
 American Marketing Association
 American Pharmaceutical Association
 American Physical Therapy Association
 American Society for Medical Technology
 American Society of Civil Engineers
 American Society of Mechanical Engineers
 Armed Forces Communications and Electronics Association
 Association of Schools of Allied Health
 Boston Society of Civil Engineers
 Council of Professional Engineering Societies
 Delta Sigma Theta (Pharmacy)
 Institute of Electrical and Electronic Engineers
 Kappa Psi (Pharmacy)
 Lambda Kappa Sigma (Pharmacy sorority)
 National Education Association
 Phi Pi Phi
 Sigma Delta Chi (Journalism)
 Society for the Advancement of Management
 Society of American Military Engineers
 Society of Women Engineers

CHAPEL

Although religious life at Northeastern emphasizes the interfaith and ecumenical spirit, denominational student organizations are given full support on campus. Most of these organizations have their own chaplains and faculty advisers, as well as student officers.

Religious life centers around the Bacon Memorial Chapel, located in the Carl S. Ell Student Center. Special holiday services are held in the Chapel and eminent clergymen are invited to speak at Interfaith services. The Dean of Chapel and the chaplains are available for counseling. A list of the religious organizations and a schedule of their religious, cultural and social activities may be picked up in the Chapel Office or the Office of Student Activities.



THE DEPARTMENT OF ATHLETICS

All students are urged to participate in the University's athletic program, which includes all the major collegiate sports.

The University maintains varsity and sub-varsity freshman teams in baseball, crew, cross-country, track, football, hockey, skiing, and basketball. These teams are among the finest in the East and have represented the University in both national and international competitions. Students also participate in such sports as golf, riflery, sailing, swimming, and waterpolo.

Home for the entire athletic program is shared between the spacious Cabot Physical Education Center and Edward S. Parsons Field. The gymnasium has four basketball courts for men and one for women, a rifle range, and a cage which provides facilities for indoor track, as well as for baseball and football drills. Parsons Field houses the Huskies football stadium and the Northeastern baseball diamond. It also accommodates training areas for the outdoor track team.

The Northeastern crew enjoys a spacious white boathouse on the Charles River and also works out in the Cabot complex, where rowing tanks are located.

The University's major athletic teams have won 690 varsity events while losing only 391 over the past ten years. Not only has success been a tradition at Northeastern, but a balanced success as well. Of the major teams competing over the ten years, 53 have had winning seasons while only 14 have been in the red column.

Northeastern annually fields one of the toughest football elevens in New England. In the last ten years they have enjoyed eight winning seasons against such Eastern powers as Temple, Harvard, and Holy Cross. The finest team in the past decade was 1963's undefeated team that went on to play in the Eastern Bowl. Last season the Huskies were 6-2 under new head coach Robert Lyons.

The Husky hockey forces are one of the most powerful in the East. They won the Eastern Collegiate Athletic Conference Holiday Hockey Tournament in 1964 and they have competed in several E.C.A.C. championships. Last season under Coach Fern Flanagan, a former Boston Bruin, the team posted a 17-12 record.

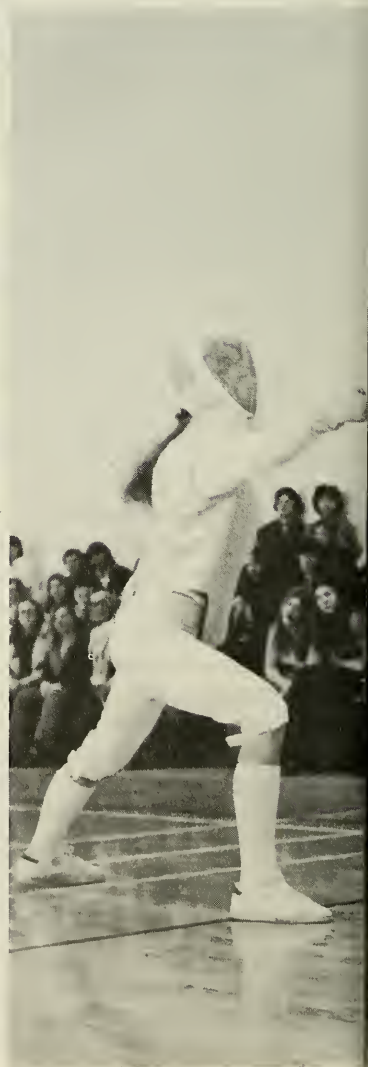
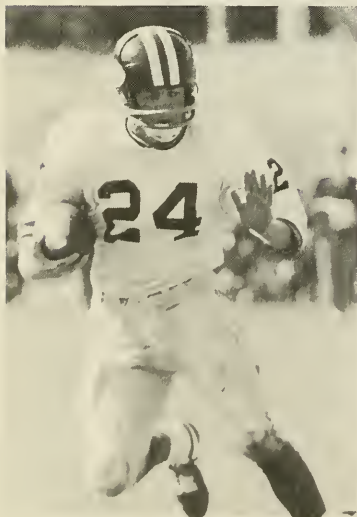
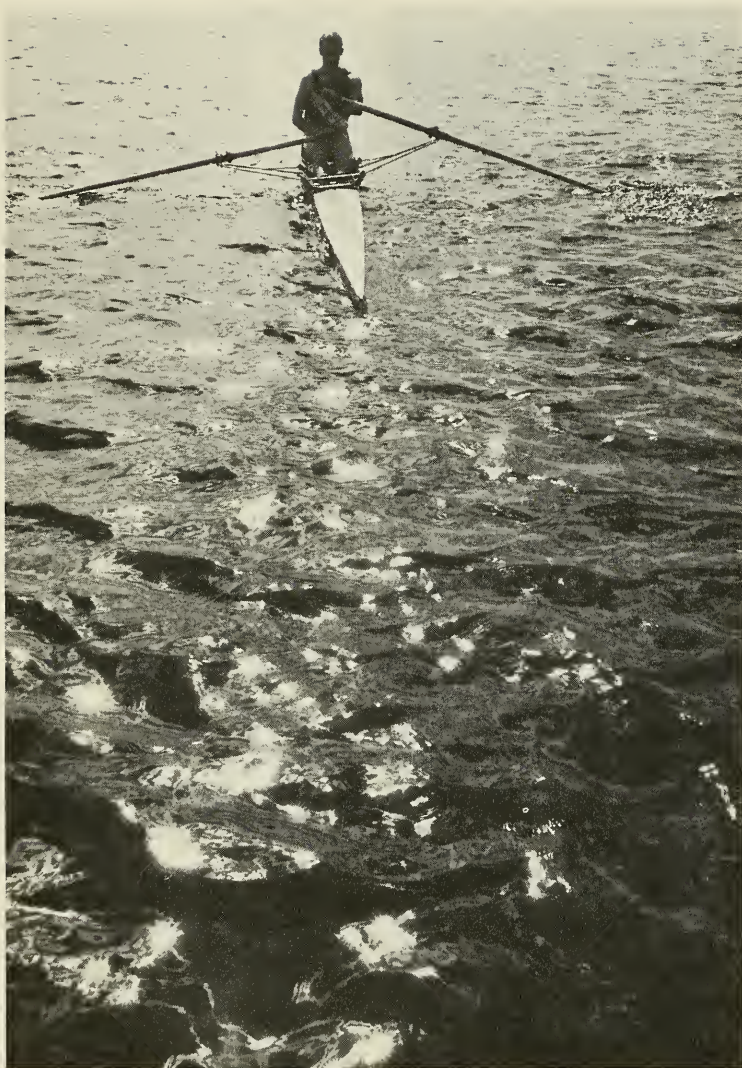
Basketball teams at Northeastern also have the winning habit. The Huskies won the N.C.A.A. Regional Championship in 1962 and 1963 and went on to compete in the national small-college championships in Evansville, Indiana. Also in 1963 Northeastern received the E.C.A.C. College Division Trophy for the finest small-college team in the East. After competing in six N.C.A.A. College Division Championships in seven years, the Huskies moved into the University Division. Since then they have continued to have winning seasons, and last year under new head coach Jim Calhoun had a 19-7 record.

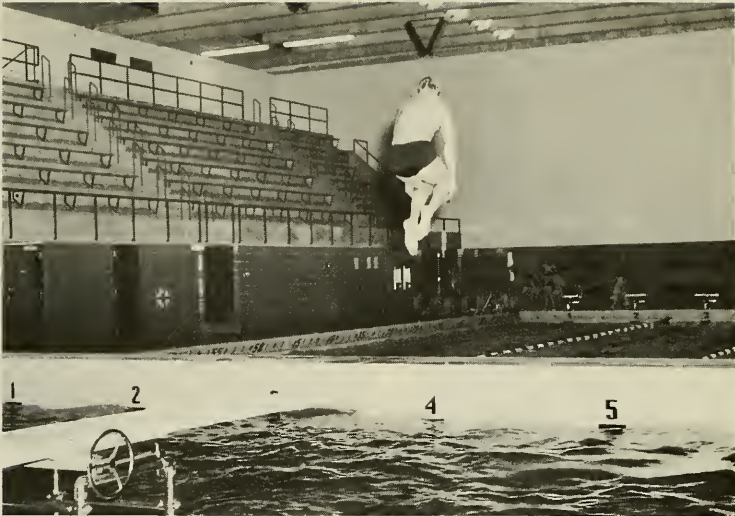
The cross country, indoor and outdoor track teams have been outstanding over the past decade. All three squads have never suffered a losing season. The cross country team has been 76-20 over the past ten years, the indoor team 85-10, and the outdoor team 61-6. Last year they won all three New England titles and Coach Irwin Cohen was named New England Coach of the Year.

Northeastern baseball ranks with the best in the East. The Huskies were the New England Champions in 1966 and went on to compete in the College World Series. They also participated in the New England playoffs in 1964 and 1972. Coach John Connelly has posted winning seasons in seven of the last ten seasons, and was New England Coach of the Year in 1964.

Northeastern instituted skiing as a varsity sport in 1970. The team competes in the prestigious Osborne Division of the New England Intercollegiate Skiing Conference, and under Coach Ed Elliott has finished second the past three years.

The most amazing Husky sport story is that of the Northeastern crew. In their first season of 1965 they won four out of five regattas, the small college rowing championship, and became the first NU team to participate in international competition when they rowed in the Henley Royal Regatta. The next year the Huskies moved into the major college rowing league and culminated their swift rise last season when coach Ernie Arlett's eight won the Easter Sprints and went on to row in the finals of the Grand Challenge cup of the Henley Royal Regatta.





FOREIGN STUDENT INFORMATION

The University welcomes qualified students from foreign lands who are adequately prepared to benefit from the educational, cultural, and social opportunities it has to offer. Seventy-five countries are currently represented by our student body.

Northeastern University is authorized under Federal law to enroll non-immigrant aliens as full-time students in degree-granting programs of its basic undergraduate colleges and graduate schools. Part-time and special students are not included in this authorization.

Because of special problems of adjustment experienced by many students from foreign countries, the University makes a special effort to examine the educational and financial qualifications of prospective students. The University also has a Foreign Student Adviser to administer to the special needs of these students.

Specific University policies for foreign students are stated in the publication, "Information for Foreign Students." This leaflet may be obtained from the Department of Admissions or the office of the Foreign Student Adviser.

The University does not award financial aid to foreign students.

FRESHMAN ORIENTATION PROGRAMS

Except for the visits which we hope students will make to the Admissions Office, the first opportunity to know Northeastern and to meet classmates, deans, and advisers will come during the freshman orientation period.

The program for the orientation period is planned and supervised by the Dean of Students and his staff. They will see to it that students are introduced to the customs and people that make up Northeastern. At that time registration, class schedules, and other procedures and details necessary to enrollment will be completed.

On the first day, in accordance with a long-standing tradition, students will be welcomed by President Knowles at the Freshman Convocation. Later students will be able to meet the Dean of their College and others who will have important roles in their college careers.

Upper-class students who volunteer their time will assist in setting up and running programs, primarily evening events, which provide opportunities for relaxation, recreation, and cultural enrichment. The Office of the Dean of Students will be available during the orientation period and throughout the year to answer questions and provide assistance.

PART IV



GENERAL INFORMATION

GENERAL INFORMATION

History

Founded in 1898, Northeastern University is incorporated as a privately endowed nonsectarian institution of higher learning under the General Laws of Massachusetts. The State Legislature by special enactment has given the University general degree-granting powers. The University is governed by a Board of Trustees who are elected by and from the Northeastern University Corporation, which is composed of 174 distinguished business and professional men and women.

From its beginning, Northeastern University has had as its dominant purpose the discovery of community educational needs and the meeting of these in distinctive and serviceable ways. The University has not duplicated the programs of other institutions but has sought to pioneer new areas of educational service.

A distinctive feature of Northeastern University is its Cooperative Plan, initiated by the College of Engineering in 1909 and subsequently adopted by the Colleges of Business Administration (1922), Liberal Arts (1935), Education (1953), Pharmacy (1962), Nursing (1964), Boston-Bouvé College (1964), the College of Criminal Justice (1967), and by Lincoln College's daytime Bachelor of Engineering Technology program (1971). This educational method enables students to gain valuable practical experience as an integral part of their college programs and also provides the means by which they may contribute substantially to the financing of their education. The Plan has been extended to the graduate level in engineering, actuarial science, rehabilitation administration, professional accounting, business administration and law.

In the field of adult education, Northeastern University offers graduate and undergraduate degree programs and non-credit programs which are specifically designed to meet the needs and interests of adults who wish to further their education on a part-time basis.

All formal courses of study leading to degrees in the Graduate Division, Lincoln College, and University College are approved by the undergraduate faculties concerned, and are governed by the same qualitative and quantitative standards as the regular day curricula. Courses are scheduled in the day and evening at the Boston Campus, Suburban Campus in Burlington, and at other off-campus locations near Boston.

During 1973-1974, the University will celebrate its 75th Anniversary. A special Convocation will be held on October 3, the founding date of the University.



General Information

Policy on Changes of Program

The University reserves the right to withdraw, modify, or add to the courses offered or to change the order or content of courses in any curriculum.

The University further reserves the right to change the requirements for graduation, tuition, and fees charged, and other regulations. However, no change in tuition and fees at any time shall become effective until the school year following that in which it is announced.

Any changes which may be made from time to time pursuant to the above policy shall be applicable to all students in the school, college, or department concerned, including former students who may re-enroll.

Textbooks and Supplies

The Northeastern University Bookstore, located on the ground floor of the Ell Student Center, is a department of the University and is operated for the convenience of the student body. All books and supplies which are required by the students for their work in the University may be purchased at the Bookstore.

The Academic Year

Northeastern University operates on a quarter system calendar.

Quarter Hour Credits

All courses are evaluated in terms of quarter hour credit. A quarter hour credit is equal to three-fourths of a semester hour credit.

Grades and Examinations *Examinations*

Examinations covering the work of the quarter are usually held at the close of each quarter. Exceptions may be made in certain courses where, in the opinion of the instructor, and with the approval of the Dean of the College concerned, final examinations are not necessary.

Students may register for a limited number of courses on a pass-fail basis. Each college has its own rules governing this system. Common to all colleges, however, is the grading system. Pass-fail grades are not included in the calculation of the quality point average. Only pass grades earn credits toward degree requirements.

Pass-Fail System

A student's grade is officially recorded by letter. A listing of grades with their numerical equivalents follows:

Grades

	Numerical Equivalents
A Outstanding Attainment	4.0
B Good Attainment	3.0
C Satisfactory Attainment	2.0
D Poor Attainment	1.0
F Failure	0.0
I Incomplete	
S Satisfactory achievement in a pass-fail course. Counts toward total degree requirements.	
U Unsatisfactory achievement in a pass-fail course.	
X Incomplete in a pass-fail course.	

A general average of D is not acceptable and will not allow student to continue at Northeastern University.

Freshman students who are taking a full academic program and who have a weighted average for the year below 1.4 will not be permitted to register for advanced work. Upper-class students should consult the Student Handbook to ascertain the level of continuing achievement required of them by the faculty of their college.

An I, or X (Incomplete), grade is used to show that the student has not completed the course requirements.

Applications for transcripts of record are made at the Registrar's Office (120 HA). No charge is made for the first transcript requested. The fee is one dollar for subsequent copies.

Transcripts

A Dean's List, issued at the end of each quarter, contains the names of upper-class and freshman students who have a 3.0 weighted average in all subjects with no grade below C during the preceding period. No student who is on any form of probation or who is carrying a schedule below eleven quarter hours is eligible for either list.

Dean's List

Reports for all students are issued at the end of each grading period. Questions relative to grades are to be discussed with the student's faculty adviser.

Reports on Scholastic Standing

At the end of the academic year, juniors will receive in addition to their term report a complete cumulative copy of their permanent record.

This is so that the junior may be aware of any discrepancies in his record, and if so, may contact the dean of his college.

All seniors who graduate in a given academic year will also receive a complete copy of their record.

Students are constantly encouraged to maintain an acceptable quality of college work. Parents and students are always welcomed by the college officers and faculty advisers for conference upon such matters.



It is the policy of Northeastern University to deal with the student in all academic and administrative matters. If parents require any information regarding the progress of their child, they may contact the Dean of Students' Office.

General Conduct

It is assumed that students come to the University for a serious purpose and that they will conform to such regulations as may from time to time be made. The University community expects each student to respect the rights and privileges of others and to adhere to acceptable standards of personal conduct. Students should exercise their freedom with maturity and responsibility. Students are expected to obey the regulations of the University, to follow the instructions of and pay due respect to University officials. Conduct inconsistent with the general order of the University may result in disciplinary action. Damage to any building or to any of the furniture, apparatus, or other property of the University will be charged to the student or students known to be immediately involved.

It is desired to administer discipline of the University so as to maintain a high standard of integrity and a scrupulous regard for truth. The attempt of any student to present any work which is not his or her own, or to pass any examination by improper means, is regarded as a most serious offense and renders the offender liable to disciplinary action. The aiding and abetting of a student in any dishonesty is also held to be a grave breach of discipline.

Attendance

Students are expected to attend all scheduled meetings of their classes.

Absence from regularly scheduled classes in any subject may seriously affect the standing of the student. It may cause the removal of the subject or subjects from the student's schedule.

Laboratory work can be made up only when it is possible to do so during hours of regularly scheduled instruction.

**Reserve
Officers'
Training Corps**

Clifford J. Fralen, LTC, USA;
M.S., *Professor and Chairman*

Lecturers

John G. Williamson, MAJ,
USA; B.S.
David W. Chin, CPT, USA;
M.A.
Larry P. Liberty, CPT, USA;
M.A.
George L. Tannehill, CPT, USA;
B.S.

Instructional Staff

John T. Oliver, SGM, USA
Jerry Lee, MSG, USA
Robert F. Gibbons, SFC, USA
Stanley Tomsick, SFC, USA

FACULTY

The Department of Military Science is the instructional department of the University which administers the Army Reserve Officers' Training Corps (ROTC) Program. The Reserve Officers' Training Corps is regarded by Northeastern University as an integral part of its educational program, and is made available on a voluntary basis to all male students who are otherwise qualified.

The Reserve Officers' Training Corps of the United States Army exists for the purpose of developing officers—leaders of men. It offers courses of instruction leading to a commission as a second lieutenant in the United States Army Reserve or the Regular Army. The mission of ROTC is to have ready in time of national emergency a corps of educated, trained military leaders for our nation. Our Northeastern ROTC is an Army, Senior Division, Class CC (Civilian College) unit.

The staff and faculty of the Department of Military Science consist of Department of the Army assigned officers, noncommissioned officers, and civilians assigned by the University. Officers are individually nominated for assignment to the University and are assigned only after records have been reviewed and each individual has been accepted by the University.

The program of instruction consists of a Basic Course and the Advanced Course. The Basic Course (MS I and MS II), taken during the freshman and sophomore years, includes instruction common to all branches of the Army. The Advanced Course (MS III and MS IV) is presented during the middler, junior, and senior years. Graduates of the Advanced Course receive commissions as second lieutenants in the U.S. Army Reserve or Regular Army.

Enrollment in the ROTC Basic Course is voluntary and is open to all male students of the Basic Colleges who are physically quali-

General Objectives

Courses of Study

Enrollment in the ROTC Basic Course

fied. Students may withdraw from the Basic Course at any time during their freshman or sophomore year. The Basic Course may be entered only at the beginning of the freshman year except for veterans and certain students who have had Junior ROTC, for whom a portion of the Basic Course may be waived.

Eligibility For the Advanced Course

The ROTC Advanced Course is available to male undergraduate students of the Basic Colleges who complete the Basic Course, to honorably discharged veterans whose service may be substituted for the Basic Course, or to students who complete a summer camp of six weeks following their sophomore year (since the cooperative program precludes regularly enrolled students attending this camp, this method of qualifying for the ROTC Advanced Course will in most cases apply only to transfer students) if:

- (1) they are citizens of the United States and will not have reached 28 years of age at the time of commissioning;
- (2) they successfully complete such survey and general screening tests as may be prescribed;
- (3) they have three academic years to complete for graduation (two for full-time students);
- (4) they are selected by the Professor of Military Science and the University;
- (5) they successfully complete a U.S. Army physical examination;
- (6) they execute a written contract with the Government.

Eligibility for ROTC Flight Training

This training is available during the senior year to specially selected cadets who successfully complete U. S. Army Aviation aptitude and physical tests. Flying instruction is conducted on an extracurricular basis by a civilian flying school under contract to the U. S. Army. An Army faculty member supervises the program. Cadets successfully completing the course may receive a Federal Aviation Agency Private Pilot's Certificate.

Veterans

Honorably discharged veterans (enlisted) may be enrolled in ROTC with one or both years of the Basic Course waived, depending on prior service. They must be co-aligned in ROTC with other members of their class in the University curricula. Veterans are a distinct benefit to the Corps of Cadets because their actual experiences lend color to the program and help to orient cadets without service. They are especially desired and are normally appointed cadet officers upon enrollment. Certain credits are available to veterans depending upon service. Former commissioned officer veterans are not eligible for ROTC.

Transfer Students

A student transferring to Northeastern University from another institution where he has been enrolled in an ROTC program similar to that at Northeastern is allowed credit for his work. The student's records are obtained from his former professor of military science. Such a transfer student must be co-aligned in ROTC with other students in his class.

Students transferring to Northeastern University as middlers, without previous ROTC training, may enroll in the Advanced Course providing they attend a six-week summer camp prior to the start of the middler year.



Students transferring to Northeastern University as sophomores may also enroll in ROTC as middlers providing they satisfactorily complete a six-week summer camp prior to the start of the middler year. Application should be made to the Department of Military Science no later than March 1.

Transfer students may obtain complete information and assistance from the Department of Military Science.

An Army uniform is issued without cost to ROTC students in the Basic Course. A \$10 deposit is required temporarily from all Basic Course students enrolling in ROTC until uniforms and property are returned in good condition. Any loss or damage to ROTC uniforms and equipment, exceeding the deposit, will be charged to the student.

Regulations of the individual Basic Colleges prescribe the number of hours of academic credit granted for ROTC classes.

All Advanced Course cadets are paid \$100 monthly during actual Advanced Course instruction, a total of \$2,000 during the three years. Camp pay is approximately \$400 over and above housing, messing, and medical care, which are free at camp. Transportation to and from camp is paid at the rate of \$.06 per mile.

The Army ROTC Scholarship Program is designed to offer financial assistance to outstanding young men who are interested in the Army as a career. Each scholarship provides for full tuition, fees, and textbooks in addition to pay of \$100 per month.

ROTC scholarships at Northeastern are for five-, four-, three-, or two-year periods. The five-year scholarships are offered to entering freshmen, whereas, enrolled ROTC cadets are eligible for the other scholarships.

These awards are not related to financial need and the earnings of a student during his cooperative work period do not reduce scholarship payments. This award may be supplemented, when necessary, by other scholarships, loans, or part-time jobs.

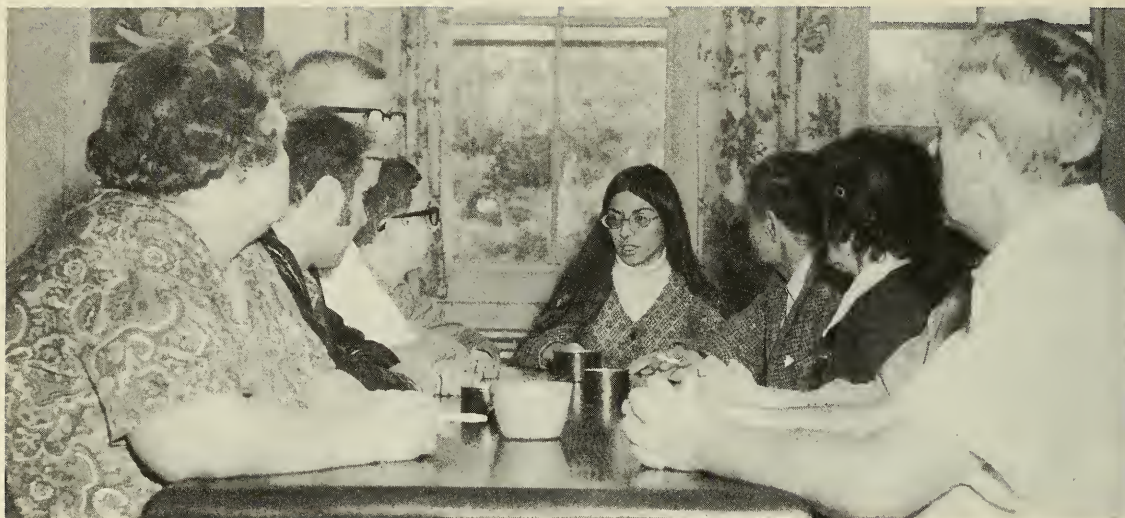
Applications for entering freshmen must be submitted prior to January 15 for the following school year. Information on the ROTC Scholarship Program may be obtained by writing to the Professor of Military Science, Northeastern University.

Uniforms and Equipment

Academic Credits

Pay

ROTC Scholarships



Cooperative Education

Cooperative Education is a dynamic system of education based on the principle that individuals can best be developed through an educational pattern that exposes them to the world beyond the boundaries of the campus. Through controlled and structured experiences, students bring an enrichment to the classroom which enhances their total development. The essential ingredients are that satisfactory participation in cooperative education is considered a degree requirement and that the institution assumes the responsibility for integrating it into the education process. It is called "cooperative education" because it is dependent upon the cooperation of outside agencies and educators in combining to form a superior total educational program.

Studies have shown that the reinforcement of classroom learning by job responsibilities increases a student's motivation and self-confidence. Greater interest in academic work develops when he sees the relationship between the job he holds and the principles he is studying on campus. These same cooperative experiences help to instill a sense of identity and worth as the student functions as an adult in an adult world.

Northeastern's commitment to cooperative education resulted in the reorganization of the Department of Cooperative Education and the formation of the Division of Cooperative Education in 1965. Included in the Division are four departments, each of which makes a unique contribution to the development of cooperative education and the enhancement of its effect on Northeastern's students.

THE DIVISION OF COOPERATIVE EDUCATION



The Department of Cooperative Education

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Hugh J. Talbot, B.S.



This is the largest of the four departments and is responsible for the administration of the cooperative education program at Northeastern. Details on the specifics of operation are explained on page 30 of this catalog and in a booklet entitled "The Co-op Plan" which is available from the Department of Admissions on request.

**The Department of
Graduate Placement
Services**

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Ralph C. Porter, M.Ed.

Coordinator of Graduate Cooperative Education

Kenneth E. Schongold, B.S.

Director of Senior and Alumni Placement Officer

William F. Brady, Jr., B.S.

Educational Placement Officers

Blossom G. Chiller, M.Ed.

Francis L. Heuston, M.Ed.

Graduate and Professional School Counselor

Thomas J. McEneaney, M.Ed.

Counseling and placement services are available to seniors and alumni of all of the programs offered by Northeastern University. Through this department, representatives of hundreds of companies are scheduled to visit the campus each year for the specific purpose of interviewing seniors for employment after graduation. Lists of job opportunities are maintained for seniors and alumni seeking openings for which they may be qualified.

The Department of Graduate Placement Services is also responsible for the referral of graduate students enrolled in programs operated on the Cooperative Plan to assignments designed to supplement classroom work. It also supplies counseling information to students who wish to continue their education at the graduate level.



The Center for Cooperative Education

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Assistant Director

Rhona E. Wolfe, M.Ed.

Director of Training

Charles F. Seaverns, Jr., Ed.M.,
C.A.G.S.

Educational institutions and other organizations exploring, developing, expanding, or improving programs in cooperative education contact the Center for a variety of services. All facets of the establishment, operation, and expansion of programs may be explored with professional consultants familiar with all aspects of cooperative education.

Intensive short-term training workshops for both new and experienced coordinators of cooperative programs and the four-week Summer Institute in Cooperative Education offering eight quarter hours of credit are among the services offered by the Center.

The Cooperative Education Research Center

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Research Associate

Carolyn D. Kany, M.A.

Research Assistant

G. Ruth Bork, M.Ed.

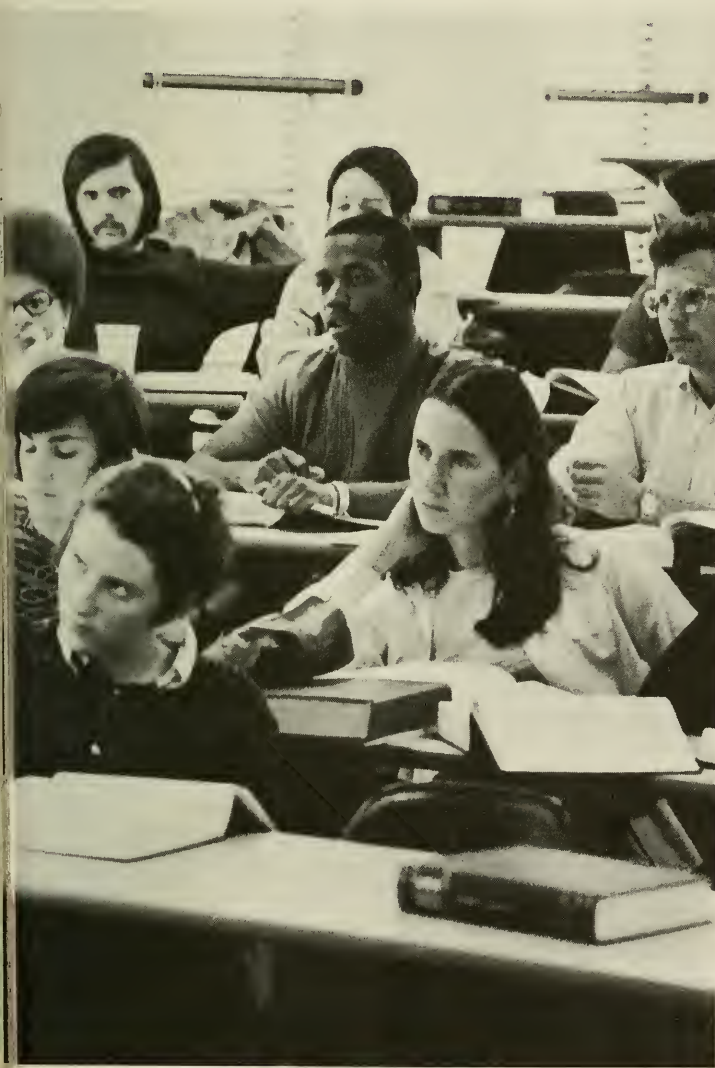
Several aspects of cooperative education are being investigated, published, and disseminated among the cooperative education community. The purpose of these studies is to aid practitioners in the field so that they can be of greater service to students enrolled in cooperative education programs. As a part of its research activity, the Research Center has established an Information Clearinghouse to store and to make available to interested persons throughout the country information about cooperative education.

Increasing Federal interest and support of cooperative education have resulted in a very rapid increase in the number of institutions of higher learning offering programs on the Cooperative Plan of education and other types of off-campus educational experience. The Institute was formed to provide counseling and placement assistance to the students of those colleges and universities.

Coordinators from the Department of Cooperative Education will be working closely with the Institute and will be providing placement assistance to the students of the participating institutions. Businesses employing these students will benefit by being able to work with a single representative from the Institute rather than a number of representatives from individual colleges and universities.

Administrative costs of operating the Institute will be shared by all of the participating institutions.

THE INSTITUTE FOR OFF-CAMPUS EXPERIENCE AND COOPERATIVE EDUCATION



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Mrs. Vivian A. Rosenberg,
M.Ed.

Audio Facility Librarian

"All that mankind has done, thought, gained, or been: it is lying as in magic preservation in the pages of books."—Thomas Carlyle

The University Libraries endeavor to provide the informational and bibliographic services required by students and scholars working in subject fields covered by University programs of instruction and research. In all, the collections include more than 350,000 cataloged volumes. In addition, the Library holds in excess of 250,000 titles on microform including the comprehensive *Libraries of American Civilization and English Literature*.

The microform collection includes microprint, microfilm, and microfiche with appropriate equipment for reading.

Periodicals (approximately 3,500 titles received currently), government documents relevant to the University, technical reports pamphlets, and recordings (more than 4,500) enhance the collections. There are duplicating facilities available in all libraries.

Libraries

The Dodge Library houses the main collections, the main bibliographic resources for the library system, the central processing





units, and library administration. Its six air-conditioned reading rooms, some of them in the process of renovation, include the Richardson Room which provides audio equipment; the Reference Room with a collection in excess of 20,000 volumes including almanacs, atlases, bibliographies, biographical dictionaries, business services, dictionaries, directories, encyclopedias, gazetteers, handbooks and manuals, indexes and abstracts and technical reports; the Periodical Room; the Documents/Microform Room; and the Reserve Book Room with a 20,000-volume collection.

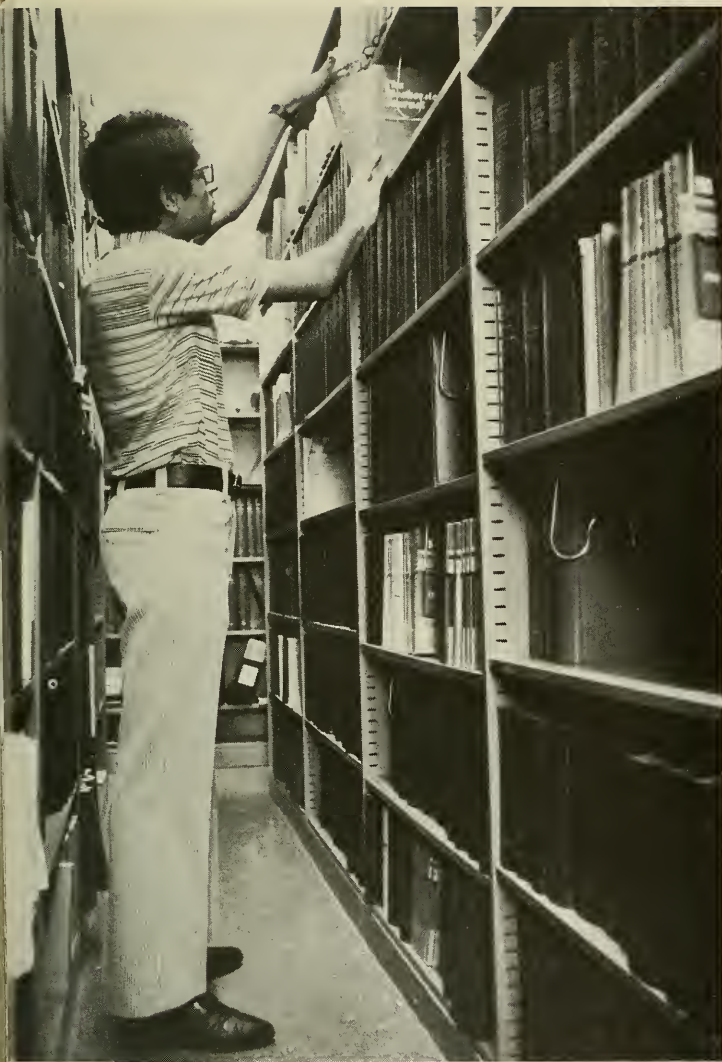
Additional libraries include the divisional libraries of Physics/Electrical Engineering, Mathematics/Psychology, and the Hurtig Hall Library (Chemistry, Biology and Pharmacy)—all graduate level collections; the Boston-Bouvé College Library; and the School of Law Library. The Suburban Campus at Burlington has its own library, and there are also collections at the Marine Science Institute in Nahant, the Center for Management Development in Andover, and at Wiggins Airways in Norwood.

Services and Hours

A handbook, bibliographic guides, and lectures introduce students to methods of utilizing the resources of the collections, and a dedicated staff is prepared to help users of the various libraries. All members of the University, and others at the discretion of the Librarian, have the use of reference books, government documents, card catalogs, and service. During term time most libraries are open 7:45 a.m. to 10:00 p.m., Monday through Thursday, 7:45 a.m. to 7:30 p.m. on Friday, 1:00 p.m. to 5:00 p.m., Saturday and Sunday with certain areas in the Dodge Library open later hours in the evening.

New England Library Information Network

The Northeastern Libraries have computerized many operations internally and, in addition, hold membership in the New England Library Information Network. NELINET has been established for the purpose of developing and operating major library support services. It is a network of libraries devoted to sharing financial, human and material resources to reduce cost and redundancy and to expand the timeliness and variety of services available.



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Learning Facilities Assistant



The Office of Educational Resources supports faculty and students with (1) multi-media classrooms for both group and independent study, (2) an instructional systems development group, (3) audio-visual production facilities, and (4) an instructional-media distribution service.

Through its two divisions, Instructional Systems Development and Instructional Media, the Office is dedicated to providing innovative methods for improving the effectiveness of instruction. Materials are obtained through commercially available sources or developed in collaboration with faculty for the purpose of supplementing lectures, providing prerequisite, remedial, or review skills and knowledge, presenting complete course units through more efficient means (e.g., programmed instruction or video tapes), or making available learning enrichment opportunities requested by individual students.

The Office of Educational Resources is equipped with a learning center for programmed study, electronically controlled video and audio study carrel positions (dial access retrieval), an individualized student response multi-media lecture hall, an audio-visual workshop area (including a small-scale portable video system), a multi-purpose experimental classroom, an instructional technology information center, an instructional materials center, a television studio, an audio studio, a film, slide, and graphics production lab, and an equipment loan facility servicing both faculty and student groups. Staff members in each division augment their regular duties by engaging in research and teaching graduate courses in instructional technology.



Learning Resources

The fourth floor of the Dodge Library building is comprised of a variety of specialized resource and study facilities. The Learning Center, open days and evenings, provides students with more than 50 individualized carrel spaces for use with programmed instruction materials, videotaped presentations, recorded lectures, slide-tape lessons, filmstrips, film loops, simulation exercises, and a host of other media. All of these materials, whether required for assignments or used as enrichment units, may be used free of charge. Students also have available to them in this facility the Machine Aids Laboratory, consisting of calculators and typewriters.

The Modern Language Laboratory is also located on the fourth floor of the Library. Close by is the Instructional Technology Information Center, which makes available to both students and faculty more than 4,500 reference items on instructional design and media. Students will also find in this area audiovisual equipment and media production workshop facilities, especially designed to accommodate students and faculty interested in developing or improving teaching skills.

The Center for Reading Improvement

The Center for Reading Improvement offers a special non-credit course for undergraduate students with below average reading ability. The purpose of this course is to teach and apply those reading and study techniques which will improve accuracy and recall of all normal college reading assignments. As a result of such gains, speed of reading increases and the student's versatility in handling all levels of reading material increases as well.

Classes meet once a week for two hours and run for one quarter. Students may register during the first week of the Fall, Winter or Spring quarter and will be given a choice of several classes scheduled throughout the week.

There is no tuition charge to full-time undergraduate students and all materials are supplied at no expense.

Prompt registration is recommended for the best possible choice.

The Counseling and Testing Center

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Assistant Director

Priscilla Belcher, Ed.M.

Counselors

David M. Fisch, M.Ed.

Alan O'Hare, M.Ed.

Gordon B. Parkhurst, M.Ed.

Richard S. Seaman, M.A.

The purpose of the Counseling and Testing Center is to help students with many different concerns such as educational and vocational planning, personal problems, feelings, and inter-personal relationships. At the Center the student is encouraged to discuss his concerns with a counselor, following which he might take one or more of these steps: continue individual discussions with the counselor; take psychological tests to increase his knowledge of himself; join a group of students with whom he can share his concerns; and make use of the Center's extensive file of information about careers and services.

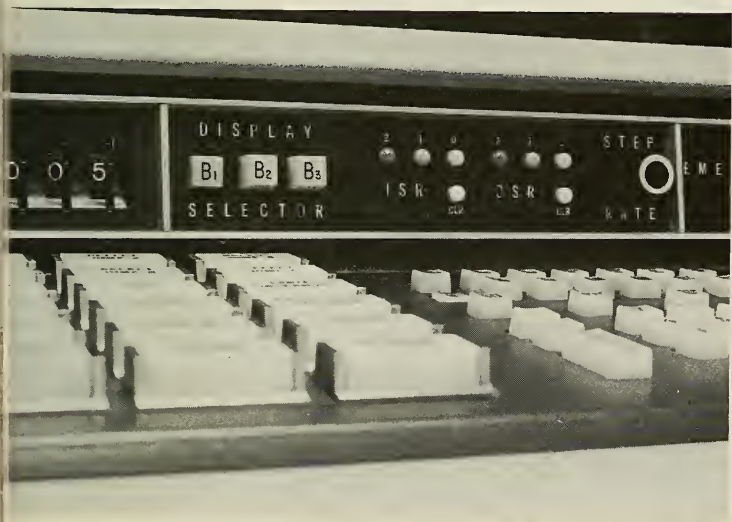
The Center's services are available without charge to all students in the Basic Colleges. Students can arrange an appointment by telephoning (617) 437-2142 or by visiting the Center in Room 302 Ell. Vocational counseling services are also available on a fee basis to high school students and adults.

The counseling services of the Counseling and Testing Center are approved by the International Association of Counseling Services.

The Computation Center

The Computation Center has proved to be invaluable both for teaching and for research purposes. Several hundred students have programs run on the computer each day. Both faculty members and students use the Center for nonsponsored research and thesis work.

An increasing amount of research is sponsored by both governmental departments and industrial concerns.











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Academic Calendar 1973-1975

September 1973

3	Monday	LABOR DAY. University closed.
13	Thursday	FALL COMMENCEMENT.
19	Wednesday	First day freshmen may occupy dormitories.
20	Thursday	Freshman (Class of 1978) registration at Boston and Burlington Campuses. Beginning of orientation period. Registration also for external transfers.
24	Monday	Beginning of 1973-1974 academic year. Upper-class registration for Divisions A and C. Boston and Burlington freshmen complete their registration. No Basic Colleges classes today.

October 1973

3	Monday	COLUMBUS DAY. University closed.
22	Monday	VETERAN'S DAY. University closed.

November 1973

22-23	Thursday-Friday	THANKSGIVING DAY recess.
-------	-----------------	--------------------------

December 1973

10-14	Monday-Friday	Final examinations for Basic Colleges.
7-Jan. 1	Monday-Tuesday	CHRISTMAS vacation.

January 1974

1	Tuesday	NEW YEAR'S DAY. University closed.
2	Wednesday	Registration for upper-class Divisions B and C. Registration for freshmen (Quarter Two) at Boston Campus, Burlington Campus, and January freshman section of class of 1978. Beginning of Winter Quarter. Beginning of Division A work quarter. No Basic Colleges classes today.

February 1974

8	Monday	WASHINGTON'S BIRTHDAY. University closed.
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March 1974

8-22	Monday-Friday	Final examinations for Basic Colleges.
25-30	Monday-Saturday	Vacation period for all students in all colleges and schools. (Division B vacation.)

April 1974

1	Monday	Registration for Divisions A and C students. Registration for freshmen (Quarter Three) at Boston Campus, Burlington Campus, and January freshmen (Quarter Two). Beginning of Spring Quarter. Beginning of Division B work period. No Basic Colleges classes today.
5	Monday	PATRIOTS' DAY. University closed.

May 1974

7	Monday	MEMORIAL DAY. University closed.
---	--------	----------------------------------

June 1974

10-14	Monday-Friday	Final examinations for Basic Colleges.
16	Sunday	COMMENCEMENT.
17-21	Monday-Friday	Division A vacation.

24	Monday	Registration for Divisions B and C and January freshmen (Quarter Three). Beginning of Summer Quarter. Beginning of Division A work quarter. No Basic Colleges classes today.
July 1974		
4	Thursday	INDEPENDENCE DAY. University closed.
September 1974		
2	Monday	LABOR DAY. University closed.
3-6	Tuesday-Friday	Final Examinations for Basic Colleges.
9-28	Monday-Saturday	Division B vacation.
12	Thursday	FALL COMMENCEMENT.
25	Wednesday	First day freshmen may occupy dormitories.
26	Thursday	Freshman (Class of 1979) registration at Boston and Burlington Campuses. Beginning of orientation period. Registration also for external transfers.
30	Monday	Beginning of 1974-1975 academic year. Upper-class registration for Divisions B and C. Boston and Burlington freshmen complete their registration. No Basic Colleges classes today.
October 1974		
14	Monday	COLUMBUS DAY. University closed.
28	Monday	VETERAN'S DAY. University closed.
November 1974		
28-29	Thursday-Friday	THANKSGIVING DAY recess.
December 1974		
16-20	Monday-Friday	Final examinations for Basic Colleges.
23-Jan. 3	Monday-Friday	CHRISTMAS vacation.
January 1975		
1	Wednesday	NEW YEAR'S DAY. University closed.
6	Monday	Registration for upper-class Divisions A and C. Registration for freshmen (Quarter Two) at Boston Campus, Burlington Campus, and January freshman section of class of 1979. Beginning of Winter Quarter. Beginning of Division B work quarter. No Basic Colleges classes today.
February 1975		
17	Monday	WASHINGTON'S BIRTHDAY. University closed.
March 1975		
24-28	Monday-Friday	Final examinations for Basic Colleges.
31-Apr. 4	Monday-Friday	Vacation period for all students in all colleges and schools. (Division A vacation.)
April 1975		
7	Monday	Registration for Divisions B and C students. Registration for freshmen (Quarter Three) at Boston Campus, Burlington Campus, and January freshmen (Quarter Two). Beginning of Spring Quarter. Beginning of Division A work period. No Basic Colleges classes today.
21	Monday	PATRIOTS' DAY. University closed.
May 1975		
26	Monday	MEMORIAL DAY. University closed.
June 1975		
16-20	Monday-Friday	Final examinations for Basic Colleges.

Academic Calendar / 247

22	Sunday	COMMENCEMENT.
23-27	Monday-Friday	Division B vacation.
30	Monday	Registration for Divisions A and C and January freshmen (Quarter Three). Beginning of Summer Quarter. Beginning of Division B work quarter. No Basic Colleges classes today.
July 1975		
4	Friday	INDEPENDENCE DAY. University closed.
September 1975		
1	Monday	LABOR DAY. University closed.
3-12	Monday-Friday	Final examinations for Basic Colleges.
15-26	Monday-Friday	Division A vacation.
24	Wednesday	First day freshmen may occupy dormitories.
25	Thursday	Freshman (Class of 1980) registration at Boston and Burlington Campuses. Beginning of orientation period. Registration also for external transfers.
29	Monday	Beginning of 1975-1976 academic year. Upper-class registration for Divisions A and C. Boston and Burlington freshmen complete their registration. No Basic Colleges classes today.



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REFERENCE

Building	Building Designation
Barletta Natatorium	BN
Botolph Building	BT
Cabot Physical Education Ctr.	CB
Churchill Hall	CH
Cushing Hall	CU
Dana Research Center	DA
Dockser Hall	DK
Dodge Library	DG
Ell Student Center and Alumni Auditorium	EC
Forsyth Building	EL
Forsyth Building Annex	FR
Greenleaf Building	FA
Hayden Hall	GR
Hurtig Hall	HA
Kennedy Building	HT
Knowles Center (Volpe)	KB
Knowles Center (Gryzmish)	KV
11 Leon Street	KG
Afro-American Institute	UO
Mugar Life Sciences Building	AF
Parker Building	MU
Richards Hall	PA
Robinson Hall	RI
United Realty Building	RB
	UR

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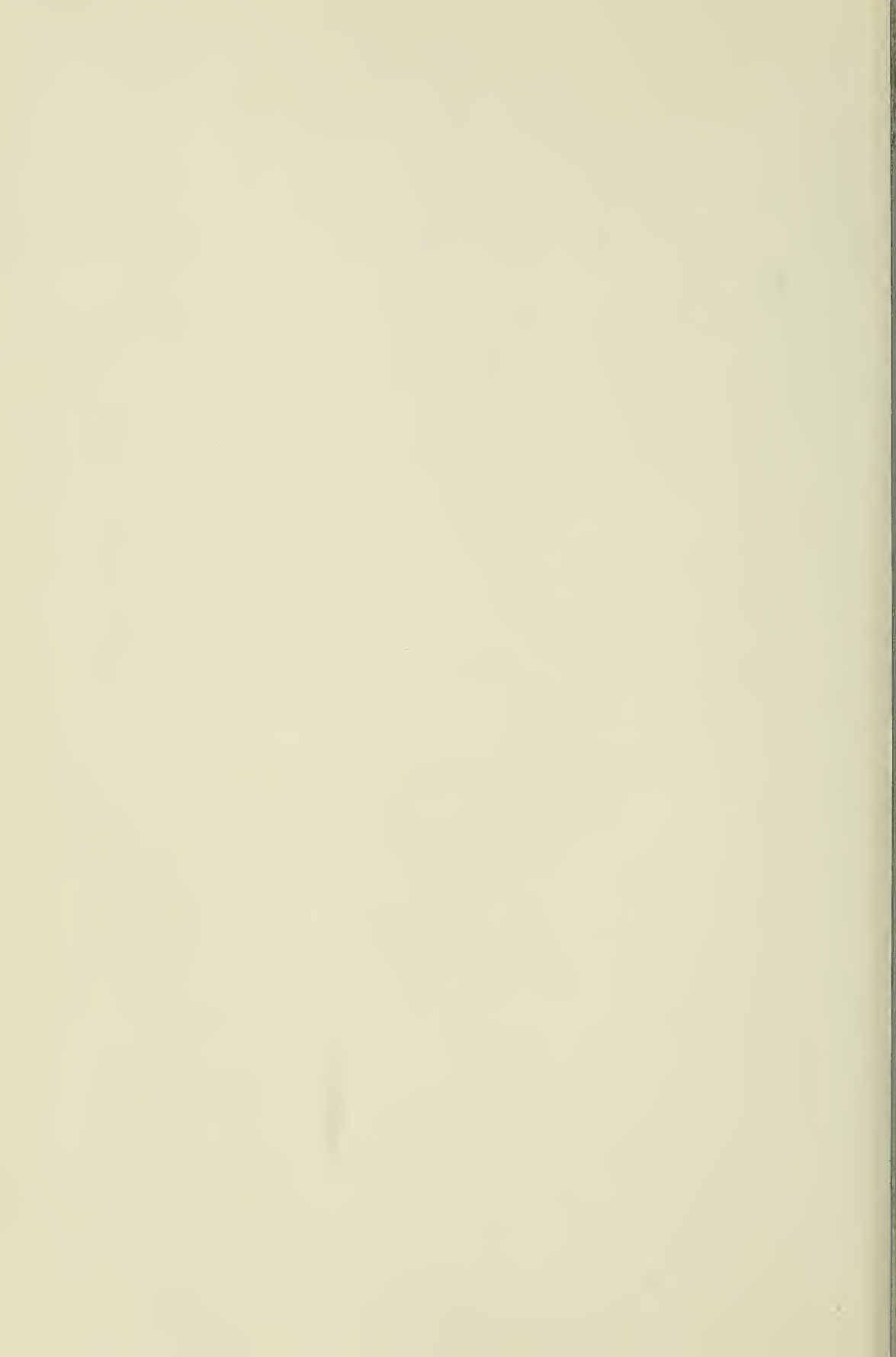


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Department of Admissions
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NORTHEASTERN UNIVERSITY COURSE DESCRIPTIONS





NORTHEASTERN UNIVERSITY BULLETIN

**1973
1974**

COURSE DESCRIPTIONS FOR THE BASIC COLLEGES

Boston-Bouvé College
College of Business Administration
College of Criminal Justice
College of Education
College of Engineering
College of Liberal Arts
Lincoln College
College of Nursing
College of Pharmacy and
Allied Health Professions

The University reserves the right to make changes
in the regulations and courses announced in this bulletin.

Printed at Northeastern University.

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Boston-Bouvé College

PHYSICAL EDUCATION- Men and Women

10.104, Fundamentals of Mathematics; 50.121, Human Development and Learning I; 62.250, Anatomy and Physiology I; a Physical Education elective; and an elective. **Quarter 4**

50.131, Human Development and Learning II; 50.141, Measurement and Evaluation; 62.251, Anatomy and Physiology II; 62.218, Elementary School Activities or an elective; and a Physical Education elective. **Quarter 5**

62.221, Perceptual-Motor Learning and Development; 62.252, Anatomy and Physiology III; 62.255, Adapted Physical Education; 62.275, Critical Teaching Skills; and a Physical Education elective. **Quarter 6**

62.210, History and Principles of Physical Education; 62.253, Kinesiology; 62.260, Measurement and Evaluation; a Physical Education elective; and an elective. **Quarter 7**

OR

62.277, Outdoor Teaching Lab; 62.218, Elementary School Activities I or 62.256, Athletic Training and Conditioning; two coaching electives; and a Boston-Bouvé College elective.

PHYSICAL EDUCATION- Women; Five-Year Plan

60.140, Analysis and Teaching of Physical Activities I; 60.141, Analysis and Teaching of Physical Activities II; 60.143, Winter Sports; 60.160, Instructional Technology; 60.220, Program and Methods in Elementary School Physical Education Activities; 62.260, Measurement and Evaluation; 65.216, Methods and Materials in Health Education. **Quarter 8**

60.142, Analysis and Teaching of Physical Activities III; 62.253, Kinesiology; 62.254, Exercise Physiology; 62.255, Adapted Physical Education; 63.135, Social Recreation or 63.215, Trends and Issues in Recreation; 65.218, Public Health; 62.280, Curriculum Development; and an elective. **Quarter 9**

62.282, Supervised Student Teaching. **Quarter 10**

62.254, Exercise Physiology; 62.280, Curriculum Development; 62.270, Administration of Physical Education; 60.230, Advanced Teaching and Analysis or 62.293, Special Problems; and one of the following Education Humanities electives: 50.152, Comparative Education, 50.153, Philosophy of Education, or 50.154, Current Issues in American Education. **Quarter 11**

PHYSICAL EDUCATION- Men; Five-Year Plan

- Quarter 8** 61.212, Handball and Squash; 61.263, Methods and Materials in Physical Education; 62.253, Kinesiology; 62.260, Measurement and Evaluation; and an elective.
- Quarter 9** 61.220, Survey of Recreation Sports; 61.237, Team Sports III; 61.280, Camp Leadership; 62.256, Athletic Training and Conditioning; 63.215, Trends and Issues in Recreation; 65.215, School and Community Health; and a Physical Education elective.
- OR
- 61.230, Secondary School Dance; 29.100, Public Speaking; a combatives elective; a coaching elective; a Physical Education elective; and two other electives.
- Quarter 10** 62.282, Supervised Student Teaching.
- Quarter 11** 62.254, Exercise Physiology; 62.255, Adapted Physical Education; 62.270, Administration of Physical Education; a Physical Education elective; and one of the following Education Humanities electives: 50.152, Comparative Education, 50.153, Philosophy of Education, or 50.154, Current Issues in American Education.

PHYSICAL EDUCATION- Women; Four-Year Plan

- Quarter 9A** 62.282, Supervised Student Teaching; or Quarter 10A.
- Quarter 10A** 62.254, Exercise Physiology; 62.255, Adapted Physical Education; 65.218, Public Health; and an elective or one of the following three courses: 60.230, Advanced Teaching Analysis, 62.292, Special Problems, 62.293, Special Problems; or Quarter 9A.

HEALTH EDUCATION

- Quarter 4** 30.113, Freshman Writing; 50.121, Human Development and Learning I; 62.250, Anatomy and Physiology I; 65.116, Nutrition.
- Quarter 5** 30.114, Introduction to Literature; 50.131, Human Development and Learning II; 62.251, Anatomy and Physiology II; and an elective.

HEALTH EDUCATION - Transfer Program

10.104, Fundamentals of Mathematics; 50.114, Education and Social Science; 50.121, Human Development and Learning I; 65.110, Foundations of Health Education; and a Boston-Bouve' College elective.

Quarter 6

18.142, Basic Animal Biology; 50.131, Human Development and Learning II; 65.114, Mental Health; a Physical Education elective; and one of the following Education Social Science electives: 50.161, Seminar in Group Process, 50.163, Schools as Social Systems, 50.164, Class and Ethnic Relations in Education, 50.165, Organization and Politics of School Systems, 50.166, Teaching and the Human Service Professions, 50.167, Education and Psychosocial Development, or 50.168, Education and Social Change.

Quarter 6A

19.146, Motivation, or its equivalent; 50.141, Measurement and Evaluation; 65.222, Drug Use and Abuse; 20.259, Urban Anthropology, or its equivalent; and a Physical Education elective.

Quarter 7

55.121, Introduction to Special Education; 65.116, Nutrition; 65.140, Concepts in Health, Aging, and Longevity; 65.223, Human Sexuality and the Family.

Quarter 8

65.217, Teaching Procedures/Curriculum in Health Education in School and Community; 65.207, First Aid, Safety and Preventive Health Education; 65.238, Seminar; and an Education Humanities elective.

Quarter 9

PHYSICAL THERAPY

11.171, Physics for the Life Sciences I; 11.173, Physics Laboratory for the Life Sciences I; 18.125, Human Physiology I; 19.102, Basic Psychology; and an elective.

Quarter 4

11.172, Physics for the Life Sciences II; 18.126, Human Physiology II; 18.148, Human Anatomy; 64.115, Introduction to Physical Therapy; and an elective.

Quarter 5

18.125, Human Physiology; 19.140, Normal and Abnormal Human Development; 64.121, Gross Anatomy; and an elective.

Quarter 6

64.131, Applied Anatomy; 64.143, Physical Therapy I; 64.210, Pathology; 64.220, Clinical Medicine I; 65.218, Public Health.

Quarter 7A

18.126, Human Physiology; 64.154, Physical Therapy II; 64.155, Physical Therapy III; 64.221, Clinical Medicine II; 64.234, Psychiatry; 64.250, Neuroanatomy.

Quarter 8A

64.222, Clinical Medicine III; 64.164, Physical Therapy IV; 64.165, Professional Literature and Research; 64.166, Rehabilitation; 64.172, Physical Therapy VI; 64.185, Supervised Clinical Practice.

Quarter 9A

- Quarter 10A** 64.171, Physical Therapy V; 64.174, Physical Therapy VII; 64.175, Ethics and Administration; 64.246, Applied Physiology; 64.187, Supervised Clinical Practice.
- Quarter 11A** 64.195, Supervised Clinical Practice.

RECREATION EDUCATION

- Quarter 4** 16.121, Natural History I; 50.121, Human Development and Learning I; 63.150, Anatomy and Physiology I; 63.133, Recreation Skills IV; and an elective.
- Quarter 5** 16.122, Natural History II; 50.131, Human Development and Learning II; 63.151, Anatomy and Physiology II; 63.134, Recreation Skills V; and an elective.
- Quarter 6** 29.163, Play Production; 63.126, Outdoor Education I; 63.255, Therapeutic Recreation; 63.267, Introduction to Youth Groups; 63.270, Arts and Crafts.
- Quarter 7** 63.160, Recreation Resources; 63.127, Outdoor Education II or 63.128, Survey of Outdoor Education and Park Facilities; and two electives.
- Quarter 8** 63.143, Winter Sports; 63.220, Methods and Materials in Recreation; 63.240, Dance and Cultures; 63.250, Group Dynamics; 63.260, Administration of Recreation and Parks; 63.262, Recreation and Budgeting and Financing.
- Quarter 9** 63.280, Supervised Field Experience and Teaching.
- Quarter 10** 63.143, Winter Sports; 63.210, Philosophy of Recreation; 63.260, Administration of Recreation and Parks; 63.285, Introduction to Research; 65.218, Public Health; and two of the following three courses: 63.146, Camp Administration, 63.256, Recreation Activities for Atypical Individuals and Groups I, 63.267, Introduction to Youth Groups.
- Quarter 11** 63.147, Outdoor Education for the Handicapped; 63.290, Research Seminar; 50.152, Comparative Education or 50.153, Philosophy of Education; and two of the following courses: 63.129, School Camping - Organization and Administration, 63.257, Recreation Activities for Atypical Individuals and Groups II, 63.262, Recreation and Budgeting and Financing, 63.266, Recreation and Community Schools.

College of Business Administration

ACCOUNTING

39.105, Principles of Economics; 43.120, Introduction to Marketing or 44.120, Introduction to Financial Activity; 49.250, Quantitative Methods I; and a liberal elective.	Quarter 4
39.106, Principles of Economics; 43.120, Introduction to Marketing, or 44.120, Introduction to Financial Activity; 49.251, Quantitative Methods II; and a liberal elective.	Quarter 5
41.251, Intermediate Accounting; 41.253, Cost Accounting I; 45.209, Organization Behavior I; and a liberal elective.	Quarter 6
41.252, Intermediate Accounting; 41.254, Cost Accounting II; 45.210, Organization Behavior II; and a liberal elective.	Quarter 7
41.262, Accounting Theory and Practice; a liberal elective; a Business elective; and an open elective.	Quarter 8
41.263, Accounting Planning and Control; 45.250, Business and Society; a liberal elective; and an open elective.	Quarter 9
45.112, Business Policy; 90.251, Placement Techniques; a liberal elective; and an open elective.	Quarter 10
All open electives.	Quarter 11

FINANCE AND INSURANCE

39.105, Principles of Economics; 43.120, Introduction to Marketing, or 44.120, Introduction to Financial Activity; 49.250, Quantitative Methods I; and a liberal elective.	Quarter 4
39.106, Principles of Economics; 43.120, Introduction to Marketing, or 44.120, Introduction to Financial Activity; 49.251, Quantitative Methods II; and a liberal elective.	Quarter 5
44.150, Corporate Financial Management; 44.151, Interpreting Financial Data; 45.209, Organization Behavior I; and a liberal elective.	Quarter 6
44.275, Money and Economic Activity; 44.260, Financial Planning; 45.210, Organization Behavior II; and a liberal elective.	Quarter 7
A liberal elective; a Finance elective; a Business elective; and an open elective.	Quarter 8
45.250, Business and Society; a Finance elective; a liberal elective; and an open elective.	Quarter 9
45.112, Business Policy; 90.251, Placement Techniques; a liberal elective; and an open elective.	Quarter 10
All open electives.	Quarter 11

GENERAL BUSINESS ADMINISTRATION

Quarter 4	39.105, Principles of Economics; 43.120, Introduction to Marketing, or 44.120, Introduction to Financial Activity; 49.101, Introduction to the Computer; 49.250, Quantitative Methods I; and a liberal elective.
Quarter 5	39.106, Principles of Economics; 49.251, Quantitative Methods II; 43.120, Introduction to Marketing or 44.120, Introduction to Financial Activity; and a liberal elective.
Quarter 6	45.209, Organization Behavior I; a liberal elective; a Business elective; and an open elective.
Quarter 7	45.210, Organization Behavior II; a liberal elective; a Business elective; and an open elective.
Quarter 8	A liberal elective; a Business elective; and an open elective.
Quarter 9	45.250, Business and Society; a liberal elective; a Business elective; and an open elective.
Quarter 10	45.112, Business Policy; 90.251, Placement Techniques; a liberal elective; a Business elective; and an open elective.
Quarter 11	A Business elective; and open electives.

INDUSTRIAL RELATIONS

Quarter 4	39.105, Principles of Economics; 43.120, Introduction to Marketing or 44.120, Introduction to Financial Activity; 49.250, Quantitative Methods I; and a liberal elective.
Quarter 5	39.106, Principles of Economics; 43.120, Introduction to Marketing or 44.120, Introduction to Financial Activity; 49.251, Quantitative Methods II; and a liberal elective.
Quarter 6	45.209, Organization Behavior I; a liberal elective; a Business elective; and an open elective.
Quarter 7	39.275, Labor Economics; 45.210, Organization Behavior II; a liberal elective; and a Business elective.
Quarter 8	45.260, Personnel - Industrial Relations; a liberal elective; a Business elective; and an open elective.
Quarter 9	45.250, Business and Society; a liberal elective; a Business elective; and an open elective.
Quarter 10	45.112, Business Policy; 45.275, Labor Law; 90.251, Placement Techniques; a liberal elective; and an open elective.
Quarter 11	45.276, Seminar in Collective Bargaining; and open electives.

INTERNATIONAL BUSINESS ADMINISTRATION

39.105, Principles of Economics; 43.120, Introduction to Marketing; 49.250, Quantitative Methods I; and a liberal elective.	Quarter 4
39.106, Principles of Economics; 44.120, Introduction to Financial Activity; 49.251, Quantitative Methods II; and a liberal elective.	Quarter 5
45.209, Organization Behavior I; 46.100, Introduction to International Business; a liberal elective; and an open elective.	Quarter 6
45.210, Organization Behavior II; a Business elective; a Liberal International elective; and an open elective.	Quarter 7
A Business International elective; a Business elective; a liberal elective; and an open elective.	Quarter 8
45.250, Business and Society; a Business elective; a Liberal International elective; and an open elective.	Quarter 9
45.112, Business Policy; 90.251, Placement Techniques; a Business International elective; a liberal elective; and an open elective.	Quarter 10
46.101, Seminar in International Business; and open electives.	Quarter 11

MANAGEMENT

39.105, Principles of Economics; 43.120, Introduction to Marketing or 44.120, Introduction to Financial Activity; 49.250, Quantitative Methods I; and a liberal elective.	Quarter 4
39.106, Principles of Economics; 43.120, Introduction to Marketing or 44.120, Introduction to Financial Activity; 49.251, Quantitative Methods II; and a liberal elective.	Quarter 5
45.209, Organization Behavior I; 49.206, Management Information Systems or 41.205, Cost Accounting for Management; a liberal elective; and an open elective.	Quarter 6
45.210, Organization Behavior II; 41.205, Cost Accounting for Management or 49.206, Management Information Systems; a liberal elective; and an open elective.	Quarter 7
45.260, Personnel - Industrial Relations; 49.155, Legal Aspects of Business; a Business elective; and a liberal elective.	Quarter 8
45.250, Business and Society; 45.265, Production Management; a liberal elective; and an open elective.	Quarter 9
45.112, Business Policy; 90.251, Placement Techniques; a liberal elective; a Business elective; and an open elective.	Quarter 10
All open electives.	Quarter 11

MARKETING

Quarter 4	39.105, Principles of Economics; 43.120, Introduction to Marketing, or 44.120, Introduction to Financial Activity; 49.250, Quantitative Methods I; and a liberal elective.
Quarter 5	39.106, Principles of Economics; 43.120, Introduction to Marketing, or 44.120, Introduction to Financial Activity; 49.251, Quantitative Methods II; and a liberal elective.
Quarter 6	43.250, Marketing Management I; 45.209, Organization Behavior I; a liberal elective; and an open elective.
Quarter 7	43.251, Marketing Management I; 45.210, Organization Behavior II; a liberal elective; and an open elective.
Quarter 8	43.240, Marketing Research; a liberal elective; a Business elective; and an open elective.
Quarter 9	45.250, Business and Society; a Marketing elective; a liberal elective; and an open elective.
Quarter 10	43.278, Competitive Strategy; 45.112, Business Policy; 90.251, Placement Techniques; a liberal elective; and an open elective.
Quarter 11	A Marketing elective; and open electives.

SMALL BUSINESS MANAGEMENT

Quarter 4	39.105, Principles of Economics; 43.120, Introduction to Marketing; 49.250, Quantitative Methods I; and a liberal elective.
Quarter 5	39.106, Principles of Economics; 44.120, Introduction to Financial Activity; 49.251, Quantitative Methods II; and a liberal elective.
Quarter 6	45.209, Organization Behavior I; 45.212, New Venture Creation; a liberal elective; and an open elective.
Quarter 7	45.210, Organization Behavior II; a liberal elective; and open electives.
Quarter 8	44.158, Small Business Finance; 45.130, Operations Analysis and Venture Capital; a liberal elective; and an open elective.
Quarter 9	45.250, Business and Society; a liberal elective; a Business elective; and an open elective.
Quarter 10	45.112, Business Policy; 49.107, Small Business Management; 90.251, Placement Techniques; a liberal elective; and an open elective.
Quarter 11	45.131, Control Systems in Smaller Companies; a Business elective; and open electives.

**TRANSPORTATION AND
PHYSICAL DISTRIBUTION MANAGEMENT**

39.105, Principles of Economics; 43.120, Introduction to Marketing, or 44.120, Introduction to Financial Activity; 49.250, Quantitative Methods I; and a liberal elective.	Quarter 4
39.106, Principles of Economics; 43.120, Introduction to Marketing, or 44.120, Introduction to Financial Activity; 49.251, Quantitative Methods II; and a liberal elective.	Quarter 5
48.101, Principles of Transportation; 45.209, Organization Behavior I; a liberal elective; and an open elective.	Quarter 6
45.210, Organization Behavior II; 48.102, Current Issues in Transportation Policy; a liberal elective; and an open elective.	Quarter 7
A Transportation elective; a Business elective; a liberal elective; and an open elective.	Quarter 8
45.250, Business and Society; 48.104, Physical Distribution Management; a liberal elective; and an open elective.	Quarter 9
45.112, Business Policy; a Transportation elective; a liberal elective; and an open elective.	Quarter 10
A Transportation elective; and open electives.	Quarter 11

College of Criminal Justice

CRIMINAL JUSTICE

- Quarter 4** 22.141, State Government and Politics; 11.113, Physics for Criminal Justice Students I, or 12.139, General Chemistry, or 18.114, Functional Human Anatomy I; a Criminal Justice elective; and an elective.
- Quarter 5** 11.114, Physics for Criminal Justice Students II, or 12.140, General Chemistry, or 18.115, Functional Human Anatomy II; a Criminal Justice elective; and an elective.
- Quarter 6** 92.137, Criminology; 92.141, Criminal Law: Procedural Due Process; and two electives.
- Quarter 7** 92.134, Constitutional Problems I: The Police and The Criminal Suspect; a Criminal Justice elective; and electives.
- Quarter 8** Criminal Justice electives; and electives.
- Quarter 9** Criminal Justice electives; and electives.
- Quarter 10** 90.255, Professional Development in Criminal Justice; Criminal Justice electives; and electives.
- Quarter 11** Criminal Justice electives; and electives.

College of Education

EDUCATION PSYCHOLOGY ELECTIVES

50.121, Human Development and Learning I	Quarter 5
50.131, Human Development and Learning II	
50.132, Creative Expression in Children	
50.133, Educational Applications of Social Psychology	
50.134, Mental Health in Teaching	
50.135, Cross-cultural Studies of Child Rearing and Education	
50.136, Language and Cognition: Educational Implications	
50.137, Seminar in Adolescent Psychology	
50.138, Seminar in Human Learning and Motivation	
50.139, Seminar in Early Childhood Development	

EDUCATION HUMANITIES ELECTIVES

50.152, Comparative Education	Quarter 10
50.153, Philosophy of Education	
50.154, Current Issues in American Education	

ELEMENTARY EDUCATION

55.121, Introduction to Special Education; 16.121, Natural History I; 39.115, Principles and Problems of Economics; and 50.121, Human Development and Learning I.	Quarter 4
55.122, Introduction to Speech and Hearing Therapy or an elective; 16.122, Natural History II; a Speech elective; and an Education Psychology elective (see list).	Quarter 5
19.201, Psychology of Abnormal Behavior or an Area elective; 51.131, Fundamentals of Arithmetic I; 51.135, Analysis of Teaching and Educational Process; 54.135, Fundamentals of Reading I.	Quarter 6
55.240, Psychology of the Mentally Retarded or an elective; 50.141, Measurement and Evaluation or a History elective; 51.132, Fundamentals of Arithmetic II; 54.136, Fundamentals of Reading II.	Quarter 7
51.141, Elementary Education; 50.141, Measurement and Evaluation or 54.141, Remedial Reading or a History elective; an elective; and a Literature elective.	Quarter 8
50.141, Measurement and Evaluation or an elective; 51.142, Elementary Education Compendium II; 54.142, Linguistics and Reading or a History elective; and a Literature elective.	Quarter 9
55.121, Introduction to Special Education or an elective; 90.253, Professional Development for Teachers; an Education Humanities elective (see list); and an elective.	Quarter 10
Two electives.	Quarter 11

TEACHING OF BIOLOGY

- Quarter 4** 12.144, Organic Chemistry I; 18.133, Plant Biology; 50.131, Human Development and Learning II; and a History elective.
- Quarter 5** 12.145, Organic Chemistry II; 18.134, Environmental and Population Biology; a History elective; and an Education Psychology elective (see list).
- Quarter 6** 11.171, Physics for the Life Sciences I; 18.135, Genetics and Development Biology; 51.135, Analysis of Teaching and Educational Process; and a Biology elective.
- Quarter 7** 11.172, Physics for the Life Sciences II; 18.136, Cell Biology; a Biology elective; and an elective.
- Quarter 8** 51.147, Methods and Materials of Teaching the Sciences; 50.141, Measurement and Evaluation or an elective; a Humanities elective; and a Biology elective.
- Quarter 9** 50.141, Measurement and Evaluation or an elective; a Biology elective; a Humanities elective; and an elective.
- Quarter 10** 90.253, Professional Development for Teachers; an Education Humanities elective (see list); Biology electives; and a Literature elective.
- Quarter 11** A Biology elective; and a Literature elective.

TEACHING OF CHEMISTRY

- Quarter 4** 11.117, Physics for Science Majors I; 11.124, Physics Laboratory for Science Majors I; 12.153, Organic Chemistry; 50.131, Human Development and Learning II; and an elective.
- Quarter 5** 11.119, Physics for Science Majors III; 11.125, Physics Laboratory for Science Majors II; 12.154, Organic Chemistry; an Education Psychology elective (see list); and an elective.
- Quarter 6** 12.166, Physical Chemistry; 51.135, Analysis of Teaching and Educational Process; a History elective; and a Chemistry elective.
- Quarter 7** 12.185, Inorganic Chemistry; 12.169, Physical Chemistry; 12.200, Principles of Experimental Chemistry; 12.201, Integrated Chemistry Laboratory I; a History elective; and an elective.
- Quarter 8** 50.141, Measurement and Evaluation or a Humanities elective; 12.170, Physical Chemistry; 12.181, Instrumental Analysis; 51.147, Methods and Materials of Teaching the Sciences; and 12.202, Integrated Chemistry Laboratory II.
- Quarter 9** 50.141, Measurement and Evaluation or a Humanities elective; 12.213, Advanced Inorganic Chemistry; 12.253, Identification of Organic Compounds; a Humanities elective; and an elective.
- Quarter 10** 12.171, Analytical Chemistry or a Chemistry elective; 90.253, Professional Development for Teachers; an Education Humanities elective (see list); a Literature elective; and an elective.
- Quarter 11** 12.171, Analytical Chemistry or a Chemistry elective; and a Literature elective.

TEACHING OF EARTH SCIENCE

11.171, Physics for the Life Sciences I; 16.201, Physical Geology; 16.203, Physical Geology Laboratory; 50.131, Human Development and Learning II; and an elective.	Quarter 4
11.172, Physics for the Life Sciences II; 16.202, Historical Geology and 16.204, Historical Geology Laboratory or an Earth Science elective; a Speech elective; and an Education Psychology elective (see list).	Quarter 5
51.135, Analysis of Teaching and Educational Process; an Earth Science elective; a History elective; and an elective.	Quarter 6
16.202, Historical Geology and 16.204, Historical Geology Laboratory or an Earth Science elective; a History elective; and electives.	Quarter 7
51.147, Methods and Materials of Teaching the Sciences; 50.141, Measurement and Evaluation or an elective; a Literature elective; and an Earth Science elective.	Quarter 8
50.141, Measurement and Evaluation or an elective; a Literature elective; an Earth Science elective; and an elective.	Quarter 9
90.253, Professional Development for Teachers; an Earth Science elective; an Education Humanities elective (see list); and two electives.	Quarter 10
An Earth Science elective; and an elective.	Quarter 11

TEACHING OF ENGLISH

30.110, Literary Analysis: Poetry; 50.131, Human Development and Learning II; an American Literature elective; and a Speech elective.	Quarter 4
30.111, Literary Analysis: Fiction or 30.112, Literary Analysis: Drama; an American Literature elective; an Education Psychology elective (see list); and an elective.	Quarter 5
26.150, Introduction to Logic; 51.135, Analysis of Teaching and Educational Process; a British Literature elective; and an English elective.	Quarter 6
30.120, Introduction to Linguistics or 30.130, Introduction to Semantics; a British Literature elective; an Art or Music elective; and an elective.	Quarter 7
30.120, Introduction to Linguistics or 30.130, Introduction to Semantics or 50.141, Measurement and Evaluation; 30.250, Shakespeare; and 51.143, Methods and Materials of Teaching English.	Quarter 8
50.141, Measurement and Evaluation or an elective; 30.251, Shakespeare; 51.139, Writing and the Teaching of Writing or an elective; and 54.126, Teaching Reading in Secondary Schools.	Quarter 9
90.253, Professional Development for Teachers; an Education Humanities elective (see list); and three electives.	Quarter 10
Two electives.	Quarter 11

TEACHING OF GENERAL SCIENCE

- Quarter 4** 10.106, Calculus; 11.171, Physics for the Life Sciences I; 12.144, Organic Chemistry; 50.131, Human Development and Learning II.
- Quarter 5** 10.107, Calculus; 11.172, Physics for the Life Sciences II; a Chemistry elective; and an Education Psychology elective (see list).
- Quarter 6** 16.201, Physical Geology; 16.203, Physical Geology Laboratory; 51.135, Analysis of Teaching and Educational Process; a History elective; and a Literature elective.
- Quarter 8** 50.141, Measurement and Evaluation or an elective; 51.147, Methods and Materials of Teaching the Sciences; a Science elective; and a Biology elective.
- Quarter 9** 50.141, Measurement and Evaluation or an elective; a Science elective; a Biology elective; and a Literature elective.
- Quarter 10** 90.253, Professional Development for Teachers; a Science elective; an Education Humanities elective (see list); and two electives.
- Quarter 11** Two electives.

TEACHING OF MATHEMATICS

- Quarter 4** 10.184, Calculus and Linear Methods I; 10.186, Differential Equations and Linear Methods I; 50.131, Human Development and Learning II; and an elective.
- Quarter 5** 10.185, Calculus and Linear Methods II; 10.187, Differential Equations and Linear Methods II; a Speech elective; and an Education Psychology elective.
- Quarter 6** 51.135, Analysis of Teaching and Educational Process; a Mathematics elective; a History elective; and a Literature elective.
- Quarter 7** A Mathematics elective; a Literature elective; a History elective; and an elective.
- Quarter 8** Two Mathematics electives; and two electives.
- Quarter 9** 50.141, Measurement and Evaluation; 51.124, Modern Mathematics Curricula; 51.145, Methods and Materials of Teaching Mathematics;
OR
Two Mathematics electives; and two electives.
- Quarter 10** 90.253, Professional Development for Teachers; a Mathematics elective; an Education Humanities elective (see list); and two electives.
- Quarter 11** A Mathematics elective; and an elective.

TEACHING OF MODERN LANGUAGES

30.170, Survey of English Literature; 39.115, Principles and Problems of Economics or 26.133, Philosophy of Science or a Science elective; 50.131, Human Development and Learning II; and a Modern Language elective.	Quarter 4
39.116, Principles and Problems of Economics or 26.150, Introduction to Logic or a Science elective; 30.171, Survey of English Literature; an Education Psychology elective (see list); and a Modern Language elective.	Quarter 5
51.135, Analysis of Teaching and Educational Process; two Modern Language electives; and an elective.	Quarter 6
Two Modern Language electives; and two electives.	Quarter 7
50.141, Measurement and Evaluation or an elective; 51.140, Methods and Materials of Teaching Modern Languages I; and two Advanced Language electives.	Quarter 8
50.141, Measurement and Evaluation or a Language seminar; 51.144, Methods and Materials of Teaching Modern Languages II; and two Advanced Language electives.	Quarter 9
90.253, Professional Development for Teachers; two Advanced Language electives; an Education Humanities elective (see list); and an elective.	Quarter 10
Two Advanced Language electives.	Quarter 11

TEACHING OF PHYSICS

10.184, Calculus and Linear Methods I; 11.127, Physics for Science Majors IV; 11.124, Physics Laboratory for Science Majors I; 50.131, Human Development and Learning II; and an elective.	Quarter 4
10.185, Calculus and Linear Methods II; 11.128, Physics for Science Majors V; 11.125, Physics Laboratory for Science Majors II; a Speech elective; and an Education Psychology elective (see list).	Quarter 5
10.250, Analysis I or 10.122, Applied Analysis; 11.200, Intermediate Mechanics; 11.260, Wave Laboratory; 51.135, Analysis of Teaching and Educational Process.	Quarter 6
10.251, Analysis II or 10.222, Applied Analysis; 11.201, Theoretical Mechanics or a Physics elective; a History elective; and an elective.	Quarter 7
12.114, General Chemistry; 50.141, Measurement and Evaluation or an elective; 51.147, Methods and Materials of Teaching the Sciences; and a Physics elective.	Quarter 8
12.115, General Chemistry; 50.141, Measurement and Evaluation or an elective; a History elective; and a Physics elective.	Quarter 9
90.253, Professional Development for Teachers; a Physics elective; a Literature elective; an Education Humanities elective (see list); and an elective.	Quarter 10
A Physics elective; and a Literature elective.	Quarter 11

TEACHING OF SOCIAL STUDIES

- Quarter 4** 23.210, The United States to 1877; 26.150, Introduction to Logic; 39.115, Principles and Problems of Economics; 50.131, Human Development and Learning II.
- Quarter 5** 23.211, The United States since 1877; 39.116, Principles and Problems of Economics; a Speech elective; and an Education Psychology elective (see list).
- Quarter 6** 23.199, The Historian's Craft; 51.135, Analysis of Teaching and Educational Process; a History elective; and a Literature elective.
- Quarter 7** 39.280, Comparative Economics; 50.141, Measurement and Evaluation; a Political Science elective; and a Literature elective.
- Quarter 8** 51.149, Methods and Materials of Teaching Social Studies; 50.154, Current Issues in American Education.
- Quarter 9** 54.126, Teaching Reading in Secondary Schools; a Political Science elective; a History elective; and a Humanities elective.
- Quarter 10** 90.253, Professional Development for Teachers; a History elective; a Social Science elective; and two electives.
- Quarter 11** All electives.

SPEECH AND HEARING THERAPY

- Quarter 4** 50.121, Human Development and Learning I; 55.121, Introduction to Special Education; 55.126, Communication Skills; and a History elective.
- Quarter 5** 55.122, Introduction to Speech and Hearing Therapy; 55.124, Anatomy, Physiology, and Neurology of the Speech and Hearing Mechanism; a History elective; and an Education Psychology elective (see list).
- Quarter 6** 19.135, Personality I; 55.131, Normal Development of Language and Speech; 55.133, Introduction to Linguistics and Phonetics; and an elective.
- Quarter 7** 19.136, Personality II; 55.134, Organic Speech Disorders; a Humanities elective; and an elective.
- Quarter 8** 55.141, Methods and Materials in Speech and Hearing and Articulation Disorders; 55.143, Diagnostic Techniques in Speech and Hearing; 55.145, Functional Speech Disorders; and a Literature elective.
- Quarter 9** 55.142, Introduction to Audiology; 55.144, Clinical Practice in Speech and Hearing I; a Literature elective; and an elective.
- Quarter 10** 55.155, Clinical Practice in Speech and Hearing II; 90.253, Professional Development for Teachers; a Humanities elective; an Education Humanities elective (see list); and an elective.
- Quarter 11** 55.152, Speechreading and Auditory Training; and 55.154, Introduction to Stuttering.

College of Engineering

CHEMICAL ENGINEERING

- 4.101, Chemical Engineering Calculations I; 10.153, Calculus; 11.206, Physics for Engineering Students IV; 11.110, Physics Laboratory for Engineering Students I; and 12.147, Organic Chemistry. **Quarter 4**
- 2.165, Mechanics I; 4.102, Chemical Engineering Calculations II; 10.154, Calculus; 11.111, Physics Laboratory for Engineering Students II; and 12.148, Organic Chemistry. **Quarter 5**
- 4.111, Chemical Engineering I; 10.155, Mathematical Analysis; 12.161, Physical Chemistry; and 39.125, Economics. **Quarter 6**
- 4.112, Chemical Engineering II; 10.156, Mathematical Analysis; 12.162, Physical Chemistry; and 39.126, Economics. **Quarter 7**
- 4.121, Transport Phenomena I; 4.123, Experimental Methods I; 4.126, Chemical Engineering Thermodynamics; 4.141, Junior Honors Program (elective); and a liberal elective. **Quarter 8**
- 4.122, Transport Phenomena II; 4.124, Experimental Methods II; 4.136, Chemical Engineering Kinetics; 4.141, Junior Honors Program (elective); and a liberal elective. **Quarter 9**
- 4.131, Process Design I or 4.133, Projects I; and two of the following three courses: 4.135, Introduction to Nuclear Engineering, 4.138, Process Control Systems, a technical elective; 90.257, Professional Development for Engineers; and a liberal elective. **Quarter 10**
- 4.132, Process Design II or 4.134, Projects II; a liberal elective; and two of the following three courses: 4.137, Applied Mathematics in Chemical Engineering, 4.124, Introduction to Optimization, 4.850, Chemical Process Pollution Control or a technical elective. **Quarter 11**

CIVIL ENGINEERING

- 1.116, Engineering Measurements and 1.117, Engineering Measurements Laboratory or 1.140, Structural Mechanics I; 10.153, Calculus; 11.110, Physics Laboratory for Engineering Students I; 11.206, Physics for Engineering Students IV; and 39.125, Economics. **Quarter 4**
- 1.116, Engineering Measurements and 1.117, Engineering Measurements Laboratory or 1.140, Structural Mechanics I; 2.130, Thermodynamics I; 10.154, Calculus; 11.111, Physics Laboratory for Engineering Students II; and 39.126, Economics. **Quarter 5**
- 1.141, Structural Mechanics II; 2.116, Dynamics; 10.155, Mathematical Analysis; and a liberal elective. **Quarter 6**

- Quarter 7** 1.120, Fluid Mechanics I; 1.142, Structural Mechanics III; 1.180, Materials; 10.156, Mathematical Analysis; and 29.113, Effective Speaking Workshop.
- Quarter 8** 3.183, Electrical Engineering I; 1.150, Concrete Design I or 1.178, Soil Mechanics and 1.179, Soil Mechanics Laboratory; a liberal elective; and one of the following four courses: 1.106, Applied Probability Theory for Civil Engineers, 1.143, Structural Analysis I, 1.175, Engineering Geology, 5.245, Basic Engineering Statistics.
- Quarter 9** 1.193, Environmental Engineering I; 1.178, Soil Mechanics and 1.179, Soil Mechanics Laboratory or 1.150, Concrete Design I; a liberal elective; and one of the following four courses: 1.105, Civil Engineering Systems, 1.143, Structural Analysis I, 1.144, Structural Analysis II, 5.260, Engineering Economy.
- Quarter 10** 1.160, Structural Design I; 90.257, Professional Development for Engineers; a liberal elective; and two of the following courses: 1.101, Special Topics, 1.106, Applied Probability Theory for Civil Engineers, 1.122, Hydraulic Engineering, 1.143, Structural Analysis I, 1.144, Structural Analysis II, 1.152, Concrete Design II, 1.175, Engineering Geology, 1.224, Environmental Chemistry, 5.245, Basic Engineering Statistics.
- Quarter 11** A liberal elective; and three of the following courses: 1.101, Special Topics, 1.105, Civil Engineering Systems, 1.134, Transportation Engineering, 1.135, Construction Engineering, 1.144, Structural Analysis II, 1.145, Structural Analysis III, 1.152, Concrete Design II, 1.161, Structural Design II, 1.174, Foundation Engineering, 1.194, Environmental Engineering II, 1.196, Environmental Laboratory, 1.259, Air Pollution, 5.260, Engineering Economy.

ELECTRICAL ENGINEERING

- Quarter 4** 3.111, Circuits and Systems I; 10.153, Calculus; 11.206, Physics for Engineering Students IV; 11.110, Physics Laboratory for Engineering Students I; and a liberal elective.
- Quarter 5** 3.112, Circuits and Systems II; 10.154, Calculus; 11.207, Elementary Modern Physics; 11.111, Physics Laboratory for Engineering Students II; and a liberal elective.
- Quarter 6** 2.130, Thermodynamics I; 3.113, Circuits and Systems III; 3.131, E.E. Laboratory I - Measurements; 10.155, Mathematical Analysis; and a liberal elective.
- Quarter 7** 2.163, Mechanics for Electrical Engineers; 3.122, Circuits and Systems IV; 3.132, E.E. Laboratory II - Circuits and Systems; 10.156, Mathematical Analysis; and a liberal elective.
- Quarter 8** 2.130, Thermodynamics I; 2.199, Materials Science; 3.141, Electronics I; and 3.161, Electromagnetic Field Theory I.

3.133, E.E. Laboratory III - Devices; 3.142, Electronics II; 3.162, Electromagnetic Field Theory II; a liberal elective; and one of the following four courses: 3.191, Design and Organization of Digital Computers, 3.261, Wave Transmission and Reception, 3.285, Introduction to Theory of Digital Computation, 3.292, Mathematical Techniques in Electrical Engineering I.

Quarter 9

3.134, E.E. Laboratory IV; 3.175, Electromechanical Dynamics; 90.257, Professional Development for Engineers; a liberal elective; and two of the following courses: 3.191, Design and Organization of Digital Computers, 3.218, Control System Theory, 3.221, Electric Power Systems I, 3.233, E.E. Power Laboratory I, 3.237, Senior Project Laboratory I, 3.238, Senior Project Laboratory II, 3.242, Theory and Technology of Semiconductor Devices I, 3.251, Communication Theory, 3.281, Fundamentals of Computation Structures, 3.292, Mathematical Techniques in Electrical Engineering II, 3.295, Numerical Methods, 3.296, Digital Techniques.

Quarter 10

A liberal elective; and two or three of the following courses: 3.144, Electronics III, 3.191, Design and Organization of Digital Computers, 3.222, Electric Power Systems II, 3.234, E.E. Power Laboratory II, 3.327, Senior Project Laboratory I, 3.238, Senior Project Laboratory II, 3.241, Selected Topics in Electronics, 3.243, Theory and Technology of Semiconductor Devices II, 3.251, Communication Theory, 3.261, Wave Transmission and Reception, 3.262, Advanced Topics in Electromagnetic Field Theory, 3.285, Introduction to Theory of Digital Computation, 3.292, Mathematical Techniques in Electrical Engineering I, 3.293, Mathematical Techniques in Electrical Engineering II, 3.296, Digital Techniques.

Quarter 11

ELECTRICAL ENGINEERING

Power Systems

3.111, Circuits and Systems I; 10.153, Calculus; 11.206, Physics for Engineering Students IV; 11.110, Physics Laboratory for Engineering Students I; and a liberal elective.

Quarter 4

3.112, Circuits and Systems II; 10.154, Calculus; 11.207, Elementary Modern Physics; 11.111, Physics Laboratory for Engineering Students II; and a liberal elective.

Quarter 5

2.130, Thermodynamics I; 3.113, Circuits and Systems III; 3.131, E.E. Laboratory I - Measurements; 10.155, Mathematical Analysis; and a liberal elective.

Quarter 6

2.131, Thermodynamics II; 3.122, Circuits and Systems IV; 3.132, E.E. Laboratory II - Circuits and Systems; 10.156, Mathematical Analysis; and a liberal elective.

Quarter 7

3.141, Electronics I; 3.161, Electromagnetic Field Theory I; 3.174, Basic Power Circuits; a liberal elective; and an added elective, 0.8G1, Probability.

Quarter 8

- Quarter 9** 3.163, Mechanics for Electrical Engineers; 3.142, Electronics II; 3.162, Electromagnetic Field Theory II; 3.175, Electromechanical Dynamics; and a liberal elective.
- Quarter 10** 3.176, Machines and Systems; 3.233, E.E. Power Laboratory I; 3.221, Electric Power Systems I; 3.823, Mathematical Methods in Electrical Engineering; 90.257, Professional Development for Engineers; and a liberal elective.
- Quarter 11** 3.222, Electric Power Systems II; 3.234, E.E. Power Laboratory II; 4.146, Introduction to Nuclear Engineering (E.E.); a liberal elective; and one of the following courses: 1.193, Environmental Engineering I, 2.196, Materials Science, 3.191, Design and Organization of Digital Computers, 5.260, Engineering Economy.

GENERAL ENGINEERING PROGRAM

- Quarter 4** 10.153, Calculus; 11.206, Physics for Engineering Students IV; 11.110, Physics Laboratory for Engineering Students I; a liberal elective; and an Engineering Science elective.
- Quarter 5** 10.154, Calculus; 11.111, Physics Laboratory for Engineering Students II; a liberal elective; an Engineering Science elective; and Coordinated Study.
- Quarter 6** A liberal elective; an Engineering Science elective; and Coordinated Studies.
- Quarter 7** A liberal elective; Engineering Science electives; and Coordinated Study.
- Quarter 8** Engineering Science electives; and Coordinated Studies.
- Quarter 9** Engineering Science electives; and Coordinated Studies.
- Quarter 10** Engineering Science electives; and Coordinated Studies.
- Quarter 11** An Engineering Science elective; and Coordinated Studies.

INDUSTRIAL ENGINEERING

- Quarter 4** 5.128, Work Design; 10.153, Calculus; 11.206, Physics for Engineering Students IV; 11.110, Physics Laboratory for Engineering Students I; and 39.115, Principles and Problems of Economics.
- Quarter 5** 5.145, Probabilistic Analysis for Engineers; 10.154, Calculus; 11.111, Physics Laboratory for Engineering Students II; 39.116, Principles and Problems of Economics; and one of the following three courses: 2.130, Thermodynamics I, 2.196, Materials Science, 5.201, Principles of Computation and Programming I.

5.147, Statistics I; 29.102, Effective Speaking; a Mathematics elective; and two of the following five courses: 1.124, Flow of Fluids, 2.130, Thermodynamics I, 2.165, Mechanics I, 3.183, Electrical Engineering I, 5.202, Principles of Computation and Programming II.	Quarter 6
5.161, Operations Research I; a liberal elective; a technical elective; and one of the following courses: 2.130, Thermodynamics I, 2.166, Mechanics II, 2.196, Materials Science, 3.184, Electrical Engineering II, 5.201, Principles of Computation and Programming I.	Quarter 7
5.161, Operations Research I; a liberal elective; a technical elective; and one of the following courses: 1.124, Flow of Fluids, 2.130, Thermodynamics I, 2.165, Mechanics I, 3.183, Electrical Engineering I, 5.202, Principles of Computation and Programming II.	Quarter 8
5.163, Operations Research II; 5.130, Systems I; a liberal elective; and one of the following courses: 2.130, Thermodynamics I, 2.166, Mechanics II, 2.196, Materials Science, 3.184, Electrical Engineering.	Quarter 9
5.130, Systems I; 5.186, People in Organizations; 5.190, Senior Project; 90.257, Professional Development for Engineers; an Industrial Engineering elective; and a non-Engineering elective.	Quarter 10
5.131, Systems II; a non-Engineering elective; and Engineering electives.	Quarter 11

MECHANICAL ENGINEERING

2.165, Mechanics I; 10.153, Calculus; 11.206, Physics for Engineering Students IV; 11.110, Physics Laboratory for Engineering Students I; and 39.115, Principles and Problems of Economics.	Quarter 4
2.166, Mechanics II; 10.154, Calculus; 2.130, Thermodynamics I; 11.111, Physics Laboratory for Engineering Students II; and a liberal elective.	Quarter 5
2.167, Mechanics III; 2.131, Thermodynamics II; 2.192, Measurement and Analysis; and 10.155, Mathematical Analysis.	Quarter 6
2.155, Fluid Mechanics I; 2.196, Materials Science; 10.156, Mathematical Analysis; and a liberal elective.	Quarter 7
Three electives; and a liberal elective.	Quarter 8
Three electives; and a elective.	Quarter 9
90.257, Professional Development for Engineers; three electives; and a liberal elective.	Quarter 10
Three electives; and a liberal elective.	Quarter 11

MECHANICAL ENGINEERING - Five-Year B.S. - M.S.

Quarter 6	2.131, Thermodynamics II; 2.167, Mechanics III; 2.192, Measurement and Analysis; 10.155, Mathematical Analysis; and a liberal elective.
Quarter 7	2.155, Fluid Mechanics I; 2.196, Materials Science; 10.156, Mathematical Analysis; and two liberal electives.
Quarter 8	2.826, Mathematical Methods for Mechanical Engineers I; three electives; a liberal elective; and a graduate elective.
Quarter 9	2.827, Mathematical Methods for Mechanical Engineers II; three electives; a liberal elective; and a graduate elective.
Quarter 10A	Graduate electives (8 Q.H.); electives (8 Q.H.); and a seminar.
Quarter 11S	Graduate electives (8 Q.H.); electives (8 Q.H.); and a seminar.
Quarter 12	Graduate electives (4 Q.H.); electives (8 Q.H.); and a thesis.

ENGINEERING TRANSFER PROGRAM

TRANSFER STUDENTS

Special Term

Quarter 5T All engineering transfer students take: 9.104, Computer Programming; 10.140, Mathematical Analysis IV-V; 11.126, Physics Review; Civils add: 1.140, Structural Mechanics I; Mechanicals add: 2.164, Mechanics; Electricals add: 3.119, Circuits and Systems A; Chemicals add: 4.103, Chemical Engineering Calculations - Transfers; and Industrials add: 10.208, Probability.

Special Term

Quarter 6T Civils take: 1.141, Structural Mechanics II; 2.116, Dynamics; 2.130, Thermodynamics I; and 10.155, Mathematical Analysis. Electricals take: 2.130, Thermodynamics I; 3.120, Circuits and Systems B; 10.155 Mathematical Analysis; and a liberal elective.

Lincoln College

B.E.T. ELECTRICAL

10.421, Calculus A; 3.451, Circuit Analysis I; 11.420, Physics Iv (Electromagnetic Field); and a liberal elective.	Quarter 4
3.324, Circuits Laboratory I; 3.440, Physical Electronics; 3.452, Circuit Analysis II; 10.422, Calculus B; and a liberal elective.	Quarter 5
3.311, Electronics I; 3.325, Circuits Laboratory II; 3.453, Circuits Analysis III; 3.460, Engineering Analysis; and 39.105, Principles of Economics.	Quarter 6
3.312, Electronics II; 3.323, Electronic Laboratory; 3.410, Electrical Measurements; 3.430, Energy Conversion; and 3.454, Circuits Analysis IV.	Quarter 7

B.E.T. MECHANICAL

10.421, Calculus A; 2.411, Mechanics A; 9.454, Production Drawing; and 2.461, Machine Shop or a liberal elective.	Quarter 4
2.414, Stress Analysis A; 2.431, Materials A; 2.412, Mechanics B; and 10.422, Calculus B.	Quarter 5
2.415, Stress Analysis B; 2.421, Thermodynamics A; 2.462, Mechanical Technology Laboratory I; 2.413, Mechanics C; and 39.116, Principles and Problems of Economics.	Quarter 6
2.422, Thermodynamics B; 2.465, Heat Technology Laboratory I; 2.441, Fluid Mechanics A; and 3.420, Electricity and Electronics I.	Quarter 7

College of Liberal Arts

ART HISTORY

Quarter 4	27.118, History of Art I; a History elective; and two electives.
Quarter 5	27.119, History of Art II; a History elective; and two electives.
Quarter 6	Two Art History electives; and two electives.
Quarter 7	Two Art History electives; and two electives.
Quarter 8	Two Art History electives; and two electives.
Quarter 9	Two Art History electives; and two electives.
Quarter 10	Two Art History electives; and two electives.
Quarter 11	Two Art History electives; and two electives.

BIOLOGY

Quarter 4	12.144, Organic Chemistry; 18.133, Plant Biology; 10.106, Calculus or an elective; a Modern Language or an elective.
Quarter 5	12.145, Organic Chemistry; 18.134, Environment and Population Biology; 10.107, Calculus or an elective; a Modern Language or an elective.
Quarter 6	18.135, Genetics and Development Biology; 11.117, Physics for Science Majors and 11.124, Physics Laboratory for Science Majors, or 11.171, Physics for the Life Sciences I and 11.173, Physics Laboratory for the Life Sciences I; and two electives.
Quarter 7	18.136, Cell Biology; 11.119, Physics for the Science Majors III and 11.125, Physics Laboratory for Science Majors II, or 11.172, Physics for the Life Sciences II and 11.174, Physics Laboratory for the Life Sciences II; and two electives.
Quarter 8	A Biology elective; and three electives.
Quarter 9	A Biology elective; and three electives.
Quarter 10	A Biology elective; and three electives.
Quarter 11	A Biology elective; and three electives.

CHEMISTRY

Quarter 4	11.124, Physics Laboratory for Science Majors; 11.118, Physics for Science Majors II; 12.153, Organic Chemistry; 33.115, Intermediate German or 34.115, Intermediate Russian; and an elective.
Quarter 5	10.207, Differential Equations; 11.125, Physics Laboratory for Science Majors II; 11.119, Physics for Science Majors III; 12.154, Organic Chemistry; 33.116, Intermediate German or 34.116, Intermediate Russian.

12.155, Organic Chemistry; 12.166, Physical Chemistry; and two electives.	Quarter 6
12.169, Physical Chemistry; 12.200, Principles of Experimental Chemistry; 12.201, Integrated Chemistry Laboratory I; 12.185, Inorganic Chemistry; and two electives.	Quarter 7
12.170, Physical Chemistry; 12.181, Instrumental Analysis; 12.202, Integrated Chemistry Laboratory I; and two electives.	Quarter 8
12.213, Advanced Inorganic Chemistry; 12.253, Identification of Organic Compounds; an advanced science or Mathematics elective; and an elective.	Quarter 9
A Mathematics elective or an advanced science elective; undergraduate research or advanced laboratory; and two electives.	Quarter 10
Four electives.	Quarter 11

DRAMA

29.150, Elementary Acting I; 29.170, Scenic Production; 19.105, Foundations of Psychology I or 20.100, Principles of Social Anthropology; a Modern Language or an elective; and Physical Education.	Quarter 4
29.110, Voice and Articulation; 19.106, Foundations of Psychology II or 21.100, Introduction to Sociology; Modern Language or an elective; Physical Education; and a Drama elective.	Quarter 5
29.209, Speech for the Theatre or an elective; a Drama elective; Physical Education; and two electives.	Quarter 6
Two Drama electives; Physical Education; and two electives.	Quarter 7
29.106, Concepts of Direction or an elective; 29.200, History of the Theatre; a Drama elective; Physical Education; and an elective.	Quarter 8
29.201, History of the Theatre; a Drama elective; Physical Education; and two electives.	Quarter 9
Two Drama electives; Physical Education; and two electives.	Quarter 10
Two Drama electives; Physical Education; and two electives.	Quarter 11

ECONOMICS

10.104, Fundamentals of Mathematics; 39.115, Principles and Problems of Economics; a Modern Language or an elective; and a Social Science elective.	Quarter 4
10.105, Fundamentals of Mathematics; 39.116, Principles and Problems of Economics; a Modern Language or an elective; and a Social Science elective.	Quarter 5
39.250, Statistics I; 39.255, Microeconomic Theory; a Social Science elective; and an elective.	Quarter 6
39.251, Statistics II; 39.256, Macroeconomic Theory; 19.106, Foundations of Psychology II or a Social Science elective; and an elective.	Quarter 7

- Quarter 8** Economics electives; and electives.
- Quarter 9** Economics electives; and electives.
- Quarter 10** Economics electives; and electives.
- Quarter 11** 39.293, Introduction to Econometrics or 39.294, Problems in Economic Research; and three electives;
OR
Two Economics electives; and two electives.

ENGLISH

- Quarter 4** 23.130, England to 1688 (Group A); 30.170, Survey of English Literature; a Modern Language or an elective; and an elective.
- Quarter 5** 23.131, England since 1688 (Group B); 30.171, Survey of English Literature; a Modern Language or an elective; and an elective.
- Quarter 6** 30.110, Literary Analysis: Poetry; an American Literature elective; and two electives.
- Quarter 7** 30.121, Foundations of the English Language; an American Literature elective; and two electives.
- Quarter 8** 30.222, Chaucer or a Medieval Literature elective; an English elective; and two electives.
- Quarter 9** 30.251, Shakespeare or another Shakespeare elective; an English elective; and two electives.
- Quarter 10** An English seminar; an Eighteenth-Century Literature elective; and two electives.
- Quarter 11** A Nineteenth-Century Literature elective; and three electives.

GEOLOGY

- Quarter 4** 10.106, Calculus or an elective; 16.211, Descriptive Mineralogy; a Physics elective; a Modern Language or an elective.
- Quarter 5** 10.107, Calculus or an elective; 16.212, Optical Crystallography; a Physics elective; a Modern Language or an elective.
- Quarter 6** Two Geology electives; a Physics elective; and an elective.
- Quarter 7** Two Geology electives; and two electives.
- Quarter 8** Two Geology electives; and two electives.
- Quarter 9** A Geology elective; and three electives.
- Quarter 10** A Geology elective; and three electives.
- Quarter 11** 16.271, Geology seminar; and three electives.

HISTORY

- Quarter 4** 23.210, The United States to 1877; a Modern Language or an elective; and two electives.

23.211, The United States since 1877; a Modern Language or an elective; and two electives.	Quarter 5
23.199, The Historian's Craft; a History elective; and two electives.	Quarter 6
Two History electives; and two electives.	Quarter 7
Two History electives; and two electives.	Quarter 8
Two History electives; and two electives.	Quarter 9
Two History electives; and two electives.	Quarter 10
A History elective; and three electives.	Quarter 11

JOURNALISM

23.210, The United States to 1877; 38.103, Fundamentals of Newswriting; a Modern Language or an elective; and one of the following three courses: 20.100, Principles of Social Anthropology, 26.101, Introduction to Philosophy I, 39.115, Principles and Problems of Economics.	Quarter 4
23.211, The United States since 1877; 38.104, Fundamentals of Newswriting; a Modern Language or an elective; and one of the following three courses: 21.100, Introduction to Sociology, 26.102, Introduction to Philosophy II, 39.116, Principles and Problems of Economics or a Math/Science elective.	Quarter 5
30.171, Survey of English Literature; 38.106, Techniques of Journalism; a History elective or a Math/Science elective; and an elective.	Quarter 7
38.101, History and Principles of Journalism; a Political Science elective or a Math/Science elective; and two electives.	Quarter 8
38.102, History and Principles of Journalism; a Political Science elective or a Math/Science elective; and two electives.	Quarter 9
38.107, The Press and Society or 38.130, Advanced Reporting; an English elective; and two electives.	Quarter 10
38.108, The Press and Society or 38.130, Advanced Reporting; an English elective; and two electives.	Quarter 11

MATHEMATICS

10.184, Calculus and Linear Methods I; 10.186, Differential Equations and Linear Methods I; a Modern Language or an elective; and an elective.	Quarter 4
10.185, Calculus and Linear Methods II; 10.187, Differential Equations and Linear Methods II; a Modern Language or an elective; and an elective.	Quarter 5
10.246, Advanced Linear Algebra I; 10.250, Analysis I; and two electives.	Quarter 6
10.247, Advanced Linear Algebra II; 10.251, Analysis II; and two electives.	Quarter 7
Two Mathematics electives; and two electives.	Quarter 8

- Quarter 9** Two Mathematics electives; and two electives.
Quarter 10 Two Mathematics electives; and two electives.
Quarter 11 Two Mathematics electives; and two electives.

MODERN LANGUAGES

- Quarter 4** 30.170, Survey of English Literature; a History elective; a Modern Language or an elective; and an elective.
Quarter 5 30.171, Survey of English Literature; a History elective; a Modern Language or an elective; and an elective.
Quarter 6 Two Language electives; and two electives.
Quarter 7 Two Language electives; and two electives.
Quarter 8 Two Language electives; and two electives.
Quarter 9 Two Language electives; and two electives.
Quarter 10 Two Language electives; and two electives.
Quarter 11 Two Language electives; and two electives.

PHILOSOPHY

- Quarter 4** 26.110, History of Ancient Philosophy; a Modern Language or an elective; and two electives.
Quarter 5 26.111, History of Modern Philosophy; a Modern Language or an elective; and two electives.
Quarter 6 26.150, Introduction to Logic or 26.151, Symbolic Logic; a Philosophy elective; and two electives.
Quarter 7 A Philosophy elective; and three electives.
Quarter 8 Two Philosophy electives; and two electives.
Quarter 9 26.155, Moral Philosophy; and two electives.
Quarter 10 A Philosophy seminar; a Philosophy elective; and two electives.
Quarter 11 Two Philosophy electives; and two electives.

PHYSICS

- Quarter 4** 10.184, Calculus and Linear Methods I; 11.124, Physics Laboratory for Science Majors; 11.127, Physics for Science Majors IV; and two electives.
Quarter 5 10.185, Calculus and Linear Methods II or 10.207, Differential Equations; 11.125, Physics Laboratory for Science Majors II; 11.128, Physics for Science Majors V; and two electives.
Quarter 6 11.200, Intermediate Mechanics; 11.220, Thermodynamics and Kinetic Theory; 11.260, Wave Laboratory; 10.221, Applied Analysis or 10.250, Analysis I; and an elective.

- 11.208, Mathematical Physics; 11.221, Wave Motion and Optics; 11.271, Electronics Laboratory; 10.222, Applied Analysis or 10.251, Analysis II or an elective. **Quarter 7**
- 11.220, Thermodynamics and Kinetic Theory; 11.230, Modern Physics; 11.271, Electronics Laboratory; 11.272, Experimental Laboratory; and two electives. **Quarter 8**
- 11.208, Mathematical Physics; and three electives. **Quarter 9**
- 11.211, Electricity and Magnetism I; 11.272, Experimental Laboratory; 11.240, Quantum Mechanics I; and three electives. **Quarter 10**
- 11.212, Electricity and Magnetism II; 11.241, Quantum Mechanics II; 11.273, Advanced Physics Laboratory; and an elective. **Quarter 11**

POLITICAL SCIENCE

- 22.151, Comparative Government; a Modern Language or an elective; and two Social Science electives. **Quarter 4**
- A Political Science elective; two Social Science electives; and a Modern Language or an elective. **Quarter 5**
- 22.221, International Relations; 22.280, Research Methods in Political Science or a Social Science elective; and two electives. **Quarter 6**
- A Political Science elective; a Social Science elective; and two electives. **Quarter 7**
- 22.281, Quantitative Methods or a Political Science elective; 22.270, Political Theory or 22.273, Political Thought I; and two electives. **Quarter 8**
- 22.261, Public Administration; 22.286, Research Seminar or a Political Science elective; and two electives. **Quarter 9**
- A Political Science elective; and three electives. **Quarter 10**
- A Political Science elective; and three electives. **Quarter 11**

PSYCHOLOGY

- 19.120, Statistics in Psychology I; a Psychology elective; and two electives. **Quarter 4**
- 19.121, Statistics in Psychology II; 19.160, Experimental Psychology I or 19.164, Learning and Motivation; a Psychology elective; and an elective. **Quarter 5**
- 19.164, Learning and Motivation or 19.160, Experimental Psychology I; a Psychology elective; an elective from Chemistry, Biology, or Physics; and an elective. **Quarter 6**
- 19.161, Experimental Psychology II or 19.163, Psychology of Learning or 19.165, Learning Laboratory; a Psychology elective; an elective from Chemistry, Biology, or Physics; and an elective. **Quarter 7**
- A Psychology elective; an Experimental Psychology elective; and two electives. **Quarter 8**

- Quarter 9** A Psychology elective; and three electives.
Quarter 10 Four electives.
Quarter 11 A Psychology elective; and three electives.

SOCIOLOGY-ANTHROPOLOGY

- Quarter 4** 21.239, Introduction to Statistical Analysis; 21.280, Social Theory I; an Introductory course in Sociology, Anthropology, Economics, Political Science or Psychology; and an elective.
Quarter 5 21.281, Social Theory II; 21.239, Introduction to Statistical Analysis or an elective; a Modern Language or an elective; and an Introductory course in Sociology, Anthropology, Economics, Political Science or Psychology.
Quarter 6 21.111, American Society; 21.240, Research Methods I; 21.101, Principles of Sociology or an elective; an Anthropology elective or a Sociology elective.
Quarter 7 21.241, Research Methods II; an Anthropology elective or a Sociology elective; and two electives.
Quarter 8 Two Sociology or Anthropology electives; and two electives.
Quarter 9 A Sociology or Anthropology elective; and two electives.
Quarter 10 A Sociology or Anthropology elective; and three electives.
Quarter 11 A Sociology or Anthropology elective; and three electives.

College of
Nursing

ASSOCIATE DEGREE
PROGRAM

19.201, Psychology of Abnormal Behavior; and 81.101, Medical-Surgical Nursing or 82.101, Maternal and Child Health.	Quarter 4
21.100, Introduction to Sociology; and 81.101, Medical-Surgical Nursing or 82.101, Maternal and Child Health.	Quarter 5
30.114, Introduction to Literature; 90.254, Professional Development for Nurses; 81.102, Medical-Surgical Nursing or 83.101, Psychiatric Nursing; and an elective.	Quarter 6
22.177, American Political Process; 81.102, Medical-Surgical Nursing or 83.101, Psychiatric Nursing; and an elective.	Quarter 7

LICENSED
PRACTICAL NURSING

21.100, Introduction to Sociology; 22.177, American Political Process; 81.102, Medical-Surgical Nursing or 82.101, Maternal and Child Health; and an elective.	Quarter 4S
30.114, Introduction to Literature; 83.101, Psychiatric Nursing; 90.254, Professional Development for Nurses; and an elective.	Quarter 4
30.114, Introduction to Literature; 83.101, Psychiatric Nursing; 90.254, Professional Development for Nurses; a History elective; and an optional elective.	Quarter 5S
82.101, Maternal and Child Health; 22.177, American Political Process; and 21.100, Introduction to Sociology or an elective.	Quarter 5
81.102, Medical-Surgical Nursing or 82.101, Maternal and Child Health; 21.100, Introduction to Sociology or an elective; and an elective.	Quarter 6S

BACHELOR'S DEGREE
PROGRAM

18.120, Basic Microbiology; 18.125, Human Physiology; 19.105, Foundations of Psychology I; and 80.204, Nursing - Universal Needs.	Quarter 4
18.126, Human Physiology; 19.106, Foundations of Psychology II; 20.100, Principles of Social Anthropology; and 80.205, Nursing - Common Problems I.	Quarter 5
19.141, Growth and Development I; 21.100, Introduction to Sociology; and 80.206, Nursing - Common Problems II.	Quarter 6

- Quarter 7** 19.130, Social Psychology; 19.142, Growth and Development II; 81.201, Medical-Surgical Nursing or 82.201, Maternal and Child Health or 83.201, Psychiatric-Mental Health Nursing.
- Quarter 8** 81.201, Medical-Surgical Nursing or 82.201, Maternal and Child Health or 83.201, Psychiatric-Mental Health Nursing; a Humanities elective; and an elective.
- Quarter 9** 81.201, Medical-Surgical Nursing or 82.201, Maternal and Child Health or 83.201, Psychiatric-Mental Health Nursing; a Humanities elective; and an elective.
- Quarter 10** 84.201, Public Health Nursing; and two electives.
- Quarter 11** 85.201, Contemporary Nursing; and an elective.

College of Pharmacy and Allied Health Professions

PHARMACY

12.144, Organic Chemistry; 11.171, Physics for the Life Sciences I; 19.105, Foundations of Psychology I; 39.115, Principles and Problems of Economics.	Quarter 4
12.145, Organic Chemistry; 11.175, Physics for the Life Sciences III; 21.100, Introduction to Sociology; 29.108, Business and Professional Speaking.	Quarter 5
71.261, Pharmacy I; 73.203, Anatomy-Physiology; 93.151, General Biochemistry; and an elective.	Quarter 6
18.120, Basic Microbiology; 71.262, Pharmacy II; 72.241, Introduction to Therapeutics; and 73.204, Anatomy-Physiology.	Quarter 6A
72.230, Drug Analysis; 72.242, Chemical Pharmacology I; 73.223, Clinical Biochemistry; and an elective.	Quarter 7
71.263, Pharmacy III; 73.245, Introduction to Pathology; 72.243, Chemical Pharmacology II; and a professional elective.	Quarter 8
71.264, Pharmacy IV; 72.244, Chemical Pharmacology III; 73.247, Toxicology; and a professional elective.	Quarter 9
35.218, Public Health; 71.265, Professional Practice I; 72.243, Chemical Pharmacology II; and a professional elective.	Quarter 10
71.245, Pharmacy Administration I; 71.266, Professional Practice I; 72.244, Chemical Pharmacology III; 90.251, Placement Techniques; and a professional elective.	Quarter 10A
71.253, Clinical Pharmacy; 71.267, Professional Practice III; and a professional elective.	Quarter 11

FORSYTH DENTAL - ASSOCIATE DEGREE PROGRAM

30.113, Freshman Writing.	Quarter 4
30.114, Introduction to Literature.	Quarter 4A
21.100, Introduction to Sociology.	Quarter 5

MEDICAL LABORATORY SCIENCE

- Quarter 4** All take 12.144, Organic Chemistry; 18.158, Vertebrate Physiology and a Modern Language or a Humanities elective; option I add a Social Science elective; option II add 87.102, Basic Medical Laboratory Hematology, 87.103, Basic Medical Laboratory Immunohematology, and 18.120, Basic Microbiology or 87.101, Basic Medical Laboratory Science.
- Quarter 5** All take 12.145, Organic Chemistry; 18.159, Vertebrate Physiology, a Modern Language or a Humanities elective; option I add 87.105, Basic Medical Laboratory Chemistry and Instrumentation; option II add 12.171, Analytical Chemistry or an elective.
- Quarter 6** All take 18.135, Genetics and Development Biology; 11.117, Physics for Science Majors and 11.124, Physics Laboratory for Science Majors or 11.171, Physics for the Life Sciences I and 11.173, Physics Laboratory for the Life Sciences I; 87.102, Basic Medical Laboratory Hematology; 87.103, Basic Medical Laboratory Immunohematology; option I add a Social Science elective, a Humanities elective or 12.171, Analytical Chemistry, and an optional elective; option II add 18.120, Basic Microbiology, 87.120, Communications in the Health Sciences or a Speech elective, a Humanities elective, and an optional elective.
- Quarter 7** 11.119, Physics for Science Majors III and 11.125, Physics Laboratory for Science Majors II or 11.172, Physics for the Life Sciences II and 11.174, Physics Laboratory for the Life Sciences II; 18.136, Cell Biology; option I add one elective and a Social Science elective; option II add a Humanities elective, 18.220, General Microbiology or 87.120, Communications in the Health Sciences or a Speech elective.
- Quarter 8** 18.158, Vertebrate Physiology; 12.171, Analytical Chemistry or an elective; 87.101, Basic Medical Laboratory Science; 87.102, Basic Medical Laboratory Hematology or 87.103, Basic Medical Laboratory Immunohematology or a Humanities elective; 87.126, Physiology or a Biology elective; and a Social Science elective.
- Quarter 9** 12.171, Analytical Chemistry; 18.159, Vertebrate Physiology; 18.220, General Microbiology; 87.120, Communications in the Health Sciences or a Speech elective; 87.126, Physiology; 87.105, Basic Medical Laboratory Chemistry and Instrumentation; and an elective.
- Quarter 10** 87.112, Hematology and Immunohematology Applied Study (at Hospital); 87.202, Hematology and Immunohematology; 87.190, undergraduate research; and 87.203, Medical Immunology and Serology;
OR
87.115, Medical Laboratory Chemistry Applied Study (at Hospital); 87.204, Medical Parasitology; 87.205, Clinical Chemistry; and 87.226, Medical Laboratory Science Education.
- Quarter 11** 87.111, Medical Microbiology Applied Study (at Hospital); 87.121, Quality Control; 87.201, Pathogenic Microbiology; and 87.222, Medical Laboratory Management.

MEDICAL RECORD ADMINISTRATION

8.114, Functional Human Anatomy I; 21.100, Introduction to Sociology; 23.101, Western Civilization or 39.115, Principles and Problems of Economics; and a Modern Language or an elective.	Quarter 4
8.115, Functional Human Anatomy II; 18.120, Basic Microbiology; 21.101, Introduction to Sociology or a Modern Language or an elective; and 23.102, Western Civilization or 39.116, Principles and Problems of Economics.	Quarter 5
3.111, Drugs - Uses and Actions; 86.107, Medical Terminology; 86.112, Foundations of Medical Science I; 29.100, Public Speaking and an elective.	Quarter 6
6.102, Hospital Law; 86.113, Foundations of Medical Science II; 86.151, Medical Record Science I; and an elective.	Quarter 7
5.209, Organizational Behavior I; 86.152, Medical Record Science I; 86.252, Applied Medical Record Science - Directed Study I; Statistics; and an elective.	Quarter 8
5.210, Organizational Behavior II; 86.153, Medical Record Science II; 86.253, Applied Medical Record Science - Directed Study II; and an elective.	Quarter 9
6.154, Medical Record Science IV; 86.155, Organization and Management - Medical Record Department; 86.254, Applied Medical Record Science; 86.157, Seminar in Medical Records; and Introduction to Computers.	Quarter 10
6.156, Organization and Management - Medical Record Department; 45.261, Interpersonal Relations; Medical Computer Applications; 87.226, Health Science Education; and Hospital Organization and Management.	Quarter 11

RESPIRATORY THERAPY

3.111, Drugs - Use and Actions; 86.112, Foundations of Medical Science I; 86.184, Procedures of Respiratory Therapy I; 86.284, Directed Applied Study - Respiratory Therapy I.	Quarter 4
6.113, Foundations of Medical Science II; 86.185, Procedures of Respiratory Therapy II; 86.285, Directed Applied Study - Respiratory Therapy II; and a liberal elective.	Quarter 5
6.174, Health, Disease, and Disability I; 86.197, Procedures in Respiratory Therapy IV; 86.511, Personal and Community Health; and an elective.	Quarter 6
6.175, Health, Disease, and Disability II; 86.198, Procedures in Respiratory Therapy V; 86.524, Methods and Materials in Public Health Education; and an elective.	Quarter 7



Course Numbering Program

The number to the left of the decimal point indicates the academic department offering the course. The three digits after the decimal point differentiate the courses within the department.

Accounting	41.	History	23.
Afro-American Studies	25.	Industrial Engineering	05.
Allied Health Professions	86.-87.	Interdisciplinary	93.
Anthropology	20.	International Business	
Art	27.	Administration	46.
Biology	18.	Italian	35.
Business General	49.	Journalism	38.
Chemical Engineering	04.	Latin	36.
Chemistry	12.	Management	45.
Civil Engineering	01.	Marketing	43.
Cooperative	90.	Mathematics	10.
Criminal Justice	92.	Mechanical Engineeringg	02.
Drama and Speech	29.	Military Science	91.
Earth Sciences (Geology)	16.	Music	28.
Economics	39.	Nursing	80.-84.
Education Foundation	50.	Pharmacy	71.-73.
Education Instruction	51.	Philosophy & Religion	26.
Education Reading	54.	Physical Education	60.-62.
Education Speech and Hearing	55.	Physical Therapy	64.
Electrical Engineering	03.	Physics	11.
English	30.	Pol. Sci.	22.
Finance and Insurance	44.	Psychology	19.
French	31.	Recreation	63.
German	33.	Russian	34.
Graphic Science	09.	Small Business Management	47.
Health Education	65.	Sociology	21.
		Spanish	32.
		Transportation	48.

Classes at Northeastern University are scheduled in different modules.

In assessing quarter hour weights for courses, the following statement applies:

One quarter hour of credit is equal to 50 minutes of instruction per week, plus two hours of preparation.

Civil Engineering

01.101 Special Topics (Prereq. outstanding academic performance) 4 Q.H.

An individual effort in an area within the field of civil engineering selected by the student and adviser with approval by the Department, resulting in a definitive report. Work to be performed in both Quarters 10 and 11, equivalent to 2 qtr. hrs. each quarter. Final grade to be awarded in Quarter 11.

Staff

Fall, Winter, Spring Qtrs.

01.105 Civil Engineering Systems (Prereq. 10.154) 4 Q.H.

Introduction to system synthesis and optimization techniques. The course is designed primarily for civil engineering students interested in planning and management in the fields of construction, transportation, environmental and structural engineering. Topics include calculus method, linear programming, network analysis, critical path scheduling, and dynamic programming.

Profs. Ossenbruggen and Scranton

Fall and Winter Qtrs.

01.106 Applied Probability Theory for Civil Engineers (Prereq. 10.154) 4 Q.H.

The basic elements of probability theory and their use via the solution of various civil

engineering problems encountered in fluid mechanics, construction management, structures, transportation, etc. Probability of events, random variables and distribution, derived distribution, expectation, and common probability models.

Prof. Ossenbruggen

Spring and Summer Qtrs.

01.116 Engineering Measurements

4 Q.H.

The methods and instruments utilized to perform engineering measurements; errors and reliability; propagation of errors in computing; application to problems of land surveying, route surveying, and topographical, hydrographical and construction surveys.

Profs. Meserve, Lenney, and Alberti

Fall and Summer Qtrs.

01.117 Engineering Measurements Laboratory

2 Q.H.*

To be taken simultaneously with 01.116. Fieldwork problems to expand and reinforce the lecture material of 01.116.

01.120 Fluid Mechanics I

(Prereq. 1.140) 4 Q.H.

Fluid properties; fluid statics; flow concepts including conservation of mass, energy and momentum; closed conduct flow including friction; dimensional analysis; introduction to open-channel flow.

Profs. Branagan, Horn, and Lenney

Spring and Summer Qtrs.

01.122 Hydraulic Engineering

(Prereq. 01.193) 4 Q.H.

Principles of hydrology, hydraulics of open-channel flow, design of water distribution systems, design of sanitary sewer and storm drainage systems, hydraulic machinery.

Profs. Branagan, Horn, and Meserve

Fall and Winter Qtrs.

01.124 Flow of Fluids

(Prereq. 02.165) 4 Q.H.

Fluid properties, fluid states, closed conduit flow, dimensional analysis, water distribution systems, open-channel flow, and introduction to sanitary sewer design.

Profs. Horn, Lenney, and Cahoon

Fall and Winter Qtrs.

01.134 Transportation Engineering

(Prereq. 01.105) 4 Q.H.

The current technology and status of the various systems of transportation of people and materials, including highways, urban mass transit, railroads, air and water transport, conveyors and pipelines. Civil engineering considerations of planning, design, cost, construction, research needs, and environmental factors.

Profs. Ossenbruggen and Scranton

Spring and Summer Qtrs.

01.135 Construction Engineering

4 Q.H.

Organizational concepts of construction entities; interrelationship of engineer, architect, and contractor; cost management systems; planning and analysis of estimates; scheduling work utilizing computer methods; management and supervision of construction operations; quality control.

Profs. Neff and Leet

Spring Qtr.

01.140 Structural Mechanics I

(Prereq. Freshman Physics) 4 Q.H.

Statics of particles and rigid bodies in two and three dimensions. Analysis of internal forces in trusses and beams. Centroids and centers of gravity of lines, area, and volumes. Moments of inertia of areas and masses.

Profs. Lenney, Namyet, and Woelfl

Winter and Spring Qtrs.

01.141 Structural Mechanics II

(Prereq. 1.140) 4 Q.H.

Review of statics. Shear and bending moment diagrams. Mechanical properties of materials. Analysis of members subjected to torsion and axial loads. Analysis of beams in shear and bending; elastic and plastic theory. Compound stresses.

Profs. Lenney, Namyet, and Woelfl

Fall and Winter Qtrs.

01.142 Structural Mechanics III

(Prereq. 01.141) 4 Q.H.

Transformation of stress and strain. Column buckling and theories of failure. Review of forces in beams and trusses. Influence lines for statically determinate structures. Deflection of trusses, beams, and frames. Utilizing the method of virtual work and moment-area propositions.

Profs. Lenney, Namyet, and Leet

Spring and Summer Qtrs.

*Including lab.

01.143 Structural Analysis I (Prereq. 01.142) 4 Q.H.
 Analysis of statically indeterminate structures utilizing the slope-deflection equations and moment-distribution. The system approach to flexibility using matrix notation is also treated.
 Profs. Khetarpal, Spencer, and Scranton All Quarters

01.144 Structural Analysis II (Prereq. 01.143) 4 Q.H.
 The analysis of all classes of structures by use of the system approach in stiffness and member approach encompassing both flexibility and stiffness completes the matrix analysis of structures. Influence lines for statically indeterminate structures.
 Profs. Lenney and Scranton All Quarters

01.145 Structural Analysis III (Prereq. 01.144) 4 Q.H.
 Approximate methods of structural analysis. Analysis of cables. Elementary structural dynamics. Analysis of membranes and shells. Structures in architecture.
 Profs. Namyet, Lenney, and Leet Spring Qtr.

01.150 Concrete Design I (Prereq. 1.141) 4 Q.H.
 Design of reinforced concrete elements by the working stress and ultimate strength methods; bending members and short columns.
 Profs. Khetarpal, Leet, and Namyet Spring and Summer Qtrs.

01.152 Concrete Design II (Prereq. 1.150) 4 Q.H.
 Design of reinforced concrete structural systems including continuous beams, frames, floors, and roofs. Prestressed concrete design theory and practice. Long columns of reinforced concrete.
 Profs. Khetarpal and Leet Fall and Winter Qtrs.

01.160 Structural Design I (Prereq. 1.141) 4 Q.H.
 Design of steel members subjected to tension, compression, bending, and combinations of loading. Introduction to plastic analysis and design. Design of connections, braced frames, and rigid frames.
 Profs. Cahoon, Namyet, and Leet Fall and Winter Qtrs.

01.161 Structural Design II (Prereq. 1.160) 4 Q.H.
 Design of steel plate girders, bridges, composite construction in bridges and buildings. Additional types in plastic analysis and design. Design for lateral loads on high-rise buildings.
 Profs. Cahoon and Leet Spring Qtr.

01.174 Foundation Engineering (Prereq. 01.178, 01.179) 4 Q.H.
 Evaluation of site survey and boring data for foundations. Determination of soil bearing capacity, design of spread footings, pile and caissons foundations. Design of retaining walls and braced sheeting. Selected topics on settlements and slope stability.
 Profs. Jaworski and Leet Spring Qtr.

01.175 Engineering Geology (Prereq. 1.180) 4 Q.H.
 Origin and composition of the earth's crust, identification of soil classes, engineering properties of soils, clay and rock mineralogy, geological mapping and exploration, earth movements, weathering, transportation of materials by wind and water.
 Profs. Jaworski and Horn Fall and Winter Qtrs.

01.178 Soil Mechanics (Prereq. 1.141) 4 Q.H.
 Soil classification, soil-water phase relationships. Introduction to ground water seepage, consolidation theory, strength properties of soils, stress distributions in soils due to surface loads, lateral earth pressures, bearing capacity of shallow footings. Laboratory tests to identify soils, to determine physical properties and soil behavior.
 Prof. Jaworski Fall and Winter Qtrs.

01.179 Soil Mechanics Laboratory 2 Q.H.*
 To be taken simultaneously with 01.178. Laboratory exercises in soil classification, seepage, shear strength, consolidation, and triaxial testing.

01.180 Materials (Prereq. Freshman Chemistry) 4 Q.H.
 The fundamentals of the behavioral classification of materials, such as metals, polymer, colloids, glasses, and composites. Other topics will include the significance of phase

*Including lab.

transformations, visco-elastic behavior, and corrosion mechanisms.

Profs. Gregory and Woelfl

Spring and Summer Qtrs.

01.182 Experimental Methods in Engineering Mechanics

(Prereq. 1.141) 4 Q.H.*

Survey of experimental techniques and instrumentation; experimental determination of basic material properties for concrete, wood, metals, and other engineering materials. Introduction to model analysis.

Prof. Woelfl and Mr. Alberti

Spring and Summer Qtrs.

01.193 Environmental Engineering I

(Prereq. 01.122) 4 Q.H.

An introduction to the nature and effects of environmental quality, including water quality, water supply, water and wastewater treatment, air pollution, and solid waste management, team-taught by various members of the staff lecturing in their specialized areas. Interrelationships between the air-water-land complex are developed. The course emphasizes the engineering approach to the management of the environment. Open to *all* engineering students.

Staff

(C.E.) Spring and Summer Qtrs.

(Other engineering disciplines)

All Quarters

01.194 Environmental Engineering II

(Prereq. 01.193) 4 Q.H.

A continuation of Environmental Engineering I dealing with the design details of various environmental projects. Topics include development of ground and surface water supplies, water and wastewater disinfection methods, design and operation of treatment plants, and industrial waste disposal. Other current engineering projects are also included.

Profs. Meserve and Blanc

Spring Qtr.

01.195 Environmental Laboratory

(Prereq. 01.223 & 01.194) 4 Q.H.*

A design and laboratory course in environmental engineering. In alternating laboratory sessions the student is assigned: 1. an individual design project selected from the areas of water supply and treatment, wastewater collection and disposal, and solid waste and air pollution control, and 2. chemistry laboratory exercises acquainting the student with basic techniques in water and wastewater analysis.

Staff

Spring Qtr.

01.197 Survey of Environmental Problems

4 Q.H.

Enrollment limited to non-engineers

Major topics: water, wastewater, air pollution, and solid waste, will be covered in the following format: What is the problem? Why does it exist? Effects of this condition. Abatement procedures. The interrelationship of environmental conditions is stressed and ecological considerations discussed.

Prof. Wei

All Quarters

01.223 Environmental Chemistry

(Freshman Chemistry) 4 Q.H.

Analytical chemistry principles are studied with reference to environmental engineering applications. The chemistry of processes, such as coagulation, iron and manganese removal, ion exchange, softening, and disinfection are included. The principles of spectroscopy and polarography are also discussed, in addition to gas transfer, oxidation and reduction, and radiation chemistry. Reaction rates with reference to environmental engineering applications such as BOD are studied, as well as topics in organic chemistry and instrumental analysis.

Profs. Cochrane and Wei

Fall and Winter Qtrs.

01.259 Air Pollution

4 Q.H.

Theory and practice related to engineering management of air resources, microclimate and dispersion of pollutants, atmospheric chemistry, air pollution instrumentation, control of gaseous and particulate emissions, and design of air pollution control systems. Biological and chemical aspects of air pollution with emphasis on the toxicological aspects of the environment, physiological effects of aerosols, analysis of organic and inorganic constituents of the atmosphere, and rationale for establishment of air quality criteria and standards.

Prof. Gregory

Spring Qtr.

*Including lab.

Mechanical Engineering

02.116 Dynamics

(Prereq. 01.140) 4 Q.H.
(Not open to M.E. Students)

Kinematics and kinetics of particles and rigid bodies, including work and energy.

Profs. Phalen and Yorra

Fall and Winter Qtrs.

02.130 Thermodynamics I

4 Q.H.

Thermodynamics is the study of the concepts of energy and energy interactions between material systems through the basic laws of thermodynamics. The concepts of energy are discussed, and the first law for the conservation of energy is set forth. A system is described, and its thermodynamic state is defined in terms of properties of substances. An energy analysis of various thermodynamic systems is presented in terms of entropy and the second law. Some consequences of the second law are discussed.

Prof. Zelinski

All Quarters

02.131 Thermodynamics II

(Prereq. 02.130) 4 Q.H.

The general thermodynamic relationships between properties of a substance are developed. The equation of state is discussed for liquids, gases, and magnetic substances. The characteristics of power systems and refrigeration systems are presented. The thermodynamics of nonreacting mixtures of gases, liquids, and solids is set forth with the development of the chemical potential and phase relationships included. Reacting mixtures are studied, and the conditions for chemical equilibrium are outlined.

Prof. Foster

All Quarters

02.132 Introduction to Combustion

(Prereq. 02.130) 4 Q.H.

The basic knowledge necessary to understand combustion phenomena and its application to selected combustion problems. Fundamental principles of thermochemistry, kinetics of chemical reactions, and transport properties of gases are given. The conservation equations for reacting mixtures are discussed. Theories of the combustion of liquid droplets, laminar diffusion flames, and premixed laminar flames are presented.

Prof. Zelinski

Spring and Summer Qtrs.

02.134 Direct Energy Conversion

(Prereq. 02.130) 4 Q.H.

Direct energy conversion is concerned with means for converting heat directly into electrical energy. Included among the devices which accomplish this are magnetohydrodynamic power generators, thermionic omission converters, and fuel cells. The operating principles of these engines are presented, and performance calculations are made. A unified theory of energy conversion is discussed based upon the concepts of irreversible thermodynamics.

Prof. Zelinski

Fall and Winter Qtrs. 1973-74

Not offered 1974-75

02.145 Design Fundamentals

(Prereq. 02.167) 4 Q.H.

Engineering design analysis of dynamically loaded machine elements. Stress concentration, contact and impact stresses, thorough treatment of fatigue factors in design (combined loading and statistical considerations). Environmental factors in design, creep, temperature and atmospheric.

Prof. Rossettos

Fall and Winter Qtrs.

02.146 Mechanical Engineering Design

(Prereq. 02.145) 4 Q.H.

Project, using system approach, which involves all aspects of mechanical engineering: mechanics, thermodynamics, heat transfer, etc. This course is intended to correlate previous courses in optimal design of various mechanical systems. Problem areas investigated may include friction and power transmission devices, hydraulic systems, etc.

Profs. Blanchard and Mills

Spring and Summer Qtrs.

02.147 Engineering Design

(Prereq. 02.167) 4 Q.H.

Intended for students who take only one course in design. Topics covered are stress concentration, fatigue and impact loading, lubrication, friction, and power transmission devices and optimum design.

Prof. Mills

Spring Qtr.

02.148 Design and Analysis

(Open to all seniors) 4 Q.H.

An interdisciplinary course. Project either analytical or experimental supervised by an

interdisciplinary faculty. Examples of projects (e.g., trash disposal, underwater search and rescue).

Prof. Blanchard

All Quarters

02.149 Engineering Analysis

4 Q.H.

Equilibrium problems in systems with a finite number of degrees of freedom (i.e., as opposed to a continuous system), extremum techniques, methods of solving the resulting algebraic equations, examples of physical situations, equilibrium stresses in elastic structures, steady state temperature distribution, steady subsonic flow, electrostatic fields, and steady flow of direct and alternating current.

Profs. Long and Rossettos

Spring and Summer Qtrs. 1973-74

Not offered 1974-75

02.150 Heat Transfer I

4 Q.H.

Modes of heat transfer; steady state and transient conduction, one and two dimensions; exact, numerical and graphical techniques; electrical analogy; natural and forced convection, laminar and turbulent; radiation; change of phase heat transfer; condensation and boiling; heat exchangers.

Prof. Bowman

Spring and Summer Qtrs.

02.155 Fluid Mechanics I

(Prereq. 02.167) 4 Q.H.

Differential and integral formulations of mass conservation and the equations of motion and energy; control volume applications; elements of one-dimensional, steady compressible flow; introductions to boundary layer theory; dimensional analysis and similitude.

Prof. Nelson

Spring and Summer Qtrs.

02.156 Fluid Mechanics II

(Prereq. 02.155) 4 Q.H.

Velocity potential and stream functions; circulation and Kelvin's theorem; two-dimensional, steady irrotational incompressible flow; Karman-Pohlhausen method applied to two-dimensional boundary layers.

Prof. Nelson

Fall and Winter Qtrs. 1973-74

Not offered 1974-75

02.157 Fluid Machinery

(Prereq. 02.155) 4 Q.H.

General principles of turbomachines; similitude and performance curves; specific speed; consideration of turbines, centrifugal pumps and impressors, axial pumps and compressors, regenerative pumps and turbines.

Prof. Nelson

Fall and Winter Qtrs. 1973-74

Not offered 1974-75

02.164 Mechanics

5 Q.H.

Statics, kinematics, and kinetics for transfer students.

Mr. Perl

Fall Qtr.

02.165 Mechanics I

4 Q.H.

The concept and vector representation of force, moment of force, position, displacement, velocity, and acceleration. Equivalent force systems. System modeling, particles and rigid bodies, free body diagrams. Equilibrium; the kinematics and kinetics of particles.

Profs. Dunn and Long

All Quarters

02.166 Mechanics II

(Prereq. 02.165) 4 Q.H.

Continuation of 02.165, Mechanics I. The kinematics and kinetics of rigid bodies. Instantaneous equations of motion, work and energy, impulse and momentum.

Profs. Dunn and Long

Spring and Summer Qtrs.

02.167 Mechanics III

(Prereq. 02.165) 4 Q.H.

Stress and strain in a solid and their transformation properties; stress-strain relation for the linear elastic solid; yield criteria; determination of the stress and deformation of simple members under axial, torsional, and flexural loadings.

Profs. Dunn and Long

Fall and Winter Qtrs.

02.168 Strength of Materials A

(Prereq. 02.167) 4 Q.H.

This course, dealing with the stress and deformation of slender members under flexural loadings, extends considerably beyond the simple shapes and loadings treated in 02.167.

Stresses in symmetric members transmitting both shear and bending; bending of unsymmetrical beams; deflections due to bending by a variety of techniques; treatment of statically indeterminate problems; elastic stability of flexible columns.

Prof. Yorra

Fall and Winter Qtrs.

02.169 Strength of Materials B

(Prereq. 02.167) 4 Q.H.

Application of the principles of the mechanics of elastic solids covered in 02.167 to a wide variety of situations of engineering interest. Energy methods; determination of the deformation and stress in curved members; pressure vessels, beams on elastic foundations, contact stresses; introduction to plastic analysis.

Prof. Phalen

Spring and Summer Qtrs.

02.171 Mechanical Vibrations

(Prereq. 02.166) 4 Q.H.

One, two, and multi-degrees of freedom systems using classical, energy, Laplace, mobility, matrix, and computer techniques.

Prof. Blanchard

Fall and Winter Qtrs. 1973-74

Not offered 1974-75

02.172 System Analysis and Control

(Prereq. 02.166) 4 Q.H.

Theoretical background for analyzing and designing a linear control system. System modeling, linear approximations and their limitations, transfer functions, and block diagramming. Applications of the Laplace transform. Transient and frequency response. Stability, frequency domain, and root locus techniques.

Prof. Chu

Not offered 1973-74

Fall and Winter Qtrs. 1974-75

02.173 Mechanics of Deformable Solids

(Prereq. 02.167) 4 Q.H.

Concept of stress tensor and elementary tensor manipulation, strain concept, the mathematical models of continuous elastic systems, methods of solution-the mathematical model, mathematical models of other deformable solids (ex. plastic, viscoelastic).

Profs. Long and Rossettos

Not offered 1973-74

Spring and Summer Qtrs. 1974-75

02.174 Engineering Astrodynamics

(Prereq. 02.166) 4 Q.H.

Topics covered are: astronomical coordinate systems, gravitational and nongravitational forces on spacecraft, the motion of artificial satellites, and observational techniques. The feasibility of voyages outside the solar system, interplanetary and interstellar navigation, and the hazards of space are discussed.

Prof. Yorra

Fall and Winter Qtrs. 1973-74

Not offered 1974-75

02.175 Analog and Digital Computer Techniques

4 Q.H.*

Analog and digital computers for both time-and displacement-based problems. Review of Boolean Algebra and Digital logic. Applications. Study of software for digital computers. Discussions about hybrid computers.

Prof. Blanchard

Not offered 1973-74

Fall and Winter Qtrs. 1974-75

02.192 Measurement and Analysis

4 Q.H.*

Principles of engineering experimentation and instrumentation (including the thorough introduction to the analog computer) stressed in lectures and in proper design of experiments to minimize experimental error and uncertainty. Testson machines particularly suited to illustrate above and commensurate with students' academic background.

Prof. Phalen

Fall and Winter Qtrs.

02.193 Mechanical Engineering Laboratory

(Prereq. 02.192) 4 Q.H.*

Project-type experiments. Students choose, research, design, and manage experiments which are of particular interest to the group and which illustrate principles of thermodynamics, strength of materials, fluid mechanics, heat transfer, etc.

Prof. Phalen

All Quarters

02.194 Mechanical Engineering Senior Project

(Prereq. 02.192) 4 Q.H.

A project may be of an analytical, design, or experimental nature. It must be approved by the

*Including lab.

faculty member under whom the student will work. A formal report must be submitted to the student's faculty supervisor at the end of the quarter.

Staff

All Quarters

02.196 Materials Science

5 Q.H.*

Crystallography, structure of solids, imperfections in crystals, phase equilibrium basic mechanisms of metal strengthening and mechanical behavior, and the effect of temperature on the structure and properties of materials (recrystallization, recovery, precipitation, rate processes).

Profs. Nowak, Murphy, Zotos

Spring and Summer Qtrs.

02.197 Mechanical Behavior of Materials

(Prereq. 02.196) 4 Q.H.

Elastic properties of materials, atomic basis for elastic constants, dislocation theory, plasticity of crystals and noncrystalline solids. Creep, fracture, fatigue.

Prof. Murphy

Fall and Winter Qtrs.

02.198 Materials Processing

(Prereq. 02.196) 4 Q.H.

Casting, joining, soldering, braxing, welding, mechanical forming, and conventional and nonconventional machining. The topics deal with metals and nonmetals.

Prof. Zotos

Spring and Summer Qtrs.

02.199 Materials Science (Not open to M.E. Students)

4 Q.H.

Covers material in 02.196, but no laboratory work included.

Profs. Nowak, Murphy, and Zotos

Fall and Winter Qtrs.

02.214 Experimental Stress Analysis

(Prereq. 02.167) 4 Q.H.*

Theory and application of mechanical and electrical strain gauges; installation, instrumentation, and circuitry of gauge setups for transducer use and experimental stress analysis; use of brittle coatings; theory and practice of photoelastic methods as applied to models and coatings.

Prof. Mills

Not offered 1973-74

Spring Qtr. 1974-75

02.232 Engineering Materials

(Prereq. 02.196 or equivalent) 4 Q.H.

Thermodynamics of materials; phase equilibria ternary systems; reactions with environment, i.e. kinetics, oxidation, corrosion, etc.; materials design criteria and materials engineering case studies.

Prof. Zotos

Fall and Winter Qtrs. 1973-74

Spring Qtr. 1974-75

02.233 Thermodynamics of Propulsion

110(Prereq. 02.131) 4 Q.H.

Application of the physical principles of thermodynamics, fluid mechanics, and plasmas to the prediction of the behavior of propulsion devices. Air-breathing engines and rocket engines are discussed in detail, with emphasis on realistic applications to demonstrate how physical laws both describe and limit the performance of particular devices. An introduction to plasmas is given. The fundamentals of electrical rocket propulsion are included.

Prof. Zelinski

Not offered 1973-74

Fall and Winter Qtrs. 1974-75

02.235 Statistical Thermodynamics

4 Q.H.

Entropy and randomness assemblies of independent particles; Boltzmann, Rose-Einstein, and Fermi-Dirac statistics; monatomic and polyatomic gases; Einstein and Debye theories of the specific heat of solids; mixed gases; chemical and dissociative equilibrium.

Prof. Nelson

Spring Qtr. 1973-74

Not offered 1974-75

02.236 Nuclear Engineering I

4 Q.H.*

Study of nuclear physics emphasizing atomic and nuclear structure, radioactive decay, and nuclear reactions, with particular attention to fusion and fission. Health physics, nuclear instrumentation, and the production and uses of radioactive isotopes. A general comparison of thermal, fast, and broader reactor types is made prior to a discussion of neutron interactions and their slowing down. The four-factor formula and diffusion equation are

*Including lab.

developed and applied to one-group theory for bare and reflected thermal reactors. Energy production and distribution within the core and flux shaping are discussed.

Profs. Bowman and Foster

Fall and Winter Qtrs.

02.237 Nuclear Engineering II

(Prereq. 02.236) 4 Q.H.

Development of two-group theory for thermal reactors and consideration of the physics and safety of fast reactors. Effect of reactivity change, either intentional or accidental, as well as changes due to temperature, fission product buildup, xenon buildup after shutdown, and fuel depletion discussed. Reactor design considerations considering the interrelationship of reactor physics, reactor engineering control, distribution of power, fuel cycle management.

Profs. Bowman and Foster

Spring Qtr.

02.258 Gas Dynamics

(Prereq. 02.130) 4 Q.H.

Derivation of the conservation laws of fluid flow, wave motion and Mach number, adiabatic flow, calculation of propulsion forces, adiabatic flow with friction, normal shock analysis, analysis of compressible flow with heating or cooling, moving and oblique shock waves.

Prof. Nelson

Not offered 1973-74

Offered Spring Qtr. 1974-75

02.260 Heat and Mass Transfer

(Prereq. 02.150) 4 Q.H.

Review of heat, mass, and momentum transfer analogies; rate equations. Conduction problems in steady-state and transient-state for both heat and mass transfer with various constant and fluctuating boundary conditions in rectangular, cylindrical, and spherical coordinates solved by formal mathematics, difference (relaxation) techniques, and methods of analogy. Thermal stresses induced by nonuniform temperature distributions; heat transfer at high velocity and in rarefied gases; boiling heat transfer at temperature extremes, with forced and natural convection; phase change in bulk stagnant systems.

Prof. Bowman

Fall and Winter Qtrs.

02.270 Dynamics

(Prereq. 02.166) 2 Q.H.

An intermediate course in engineering mechanics. Topics treated are: central force motion, gyroscopic motion, dynamic stability, variational mechanics, and the principle of least action. The Lagrangian equation of motion is developed and applied to problems of the dynamics of particles and rigid bodies.

Profs. Yorra and Lautman

Spring Qtr.

Electrical Engineering

03.111 Circuits and Systems I

(Prereq. 10.1523) 4 Q.H.

Circuit elements (linear, nonlinear, time-invariant, and time-varying) sources (independent and controlled), Kirchhoff's laws, Tellegen's theorem, Thevenin's theorem, network topology, mesh and nodal analysis.

Prof. Kellner

Fall and Winter Qtrs.

03.112 Circuits and Systems II

(Prereq. 3.111) 4 Q.H.

Linearity and time-invariance, system function, forced and force-free response of networks and L.T.I. systems, singularity response, partial fraction expansion, "Pre-box" concept, and signal flow graphs.

Prof. Kellner

Spring and Summer Qtrs.

03.113 Circuits and Systems III

(Prereq. 3.112) 4 Q.H.

Thevenin's theorem revisited, magnitude and phase plots, resonance, two-port networks, energy and power, and convolution.

Prof. Martin

Fall and Winter Qtrs.

03.122 Circuits and Systems IV

(Prereq. 3.113) 4 Q.H.

Fourier analysis, Fourier series and transform, spectral analysis of AM-modulation, bilateral Laplace transform, unilateral Laplace transform, and correlation.

Prof. Schetzen

Spring and Summer Qtrs.

03.131 E.E. Laboratory I-Measurements

(Prereq. 3.111) 2 Q.H.*

Basic electrical measurements, report writing, use of standard laboratory instruments

*Including lab.

including digital voltmeters, oscilloscopes, and bridges.

Prof. Martin

Spring and Summer Qtrs.

03.132 E.E. Laboratory II-Circuits and Systems

(Prereq. 3.112) 2 Q.H.*

Experiments tied in the Circuits and Systems courses, together with more work in measurements.

Prof. Martin

Fall and Winter Qtrs.

03.133 E.E. Laboratory III-Devices

(Prereq. 3.141) 2 Q.H.*

Introduction to the analog computer, electro-optics, terminal characteristics of active devices.

Prof. Martin

Spring and Summer Qtrs.

03.134 E.E. Laboratory IV

(Prereq. 3.142, 3.161) 2 Q.H.*

Analog computation, logic circuits, design and testing of active circuits, microwaves studies, control systems.

Prof. Martin

Fall and Winter Qtrs.

03.141 Electronics I

(Prereq. 3.122) 4 Q.H.

This first course in electronics stresses the significance of nonlinear active devices as related to the behavior of circuits and systems concerned with functions in the frequency domain. Linear models for diodes, and discrete and integrated circuit active devices are developed to cope with the d-c characteristics and incremental gain and impedances of such devices. The concept of ideal amplification is modified to stress the limitations imposed upon bandwidth and gain by impedance levels, noise, parameter variation, and distortion encountered with current active devices. Consideration is given to cascaded stages, composite two-part, hybrid, and nonhybrid configurations.

Profs. Grabel and Cochrun

Fall and Winter Qtrs.

03.142 Electronics II

(Prereq. 3.141) 4 Q.H.

This course is a continuation of Electronics I. Consideration is given to various types of coupling for cascaded stages, with emphasis on the differential configuration as the heart of the generalized operational amplifier. The topic of feedback for single loop amplifiers emphasizes the concept of loop gain and its influence on gain, impedance levels, bandwidth, and stability. Consideration is given to both desirable and undesirable stability concepts. The topic frequency translation included AM, FM, and PM systems. Frequency selective amplifiers are considered on the basis of LC-tuned circuits and active filters.

Profs. Grabel and Cochrun

Spring and Summer Qtrs.

03.144 Electronics III

(Prereq. 3.142) 4 Q.H.

This course is a continuation of Electronics II. Operational amplifiers are introduced, with consideration given to their operation, limitations, and applications. Applications include linear functions in the frequency domain and analog arithmetic operations. The topic, digital circuits, is related to the basic structure of digital computers. Consideration is given to the fundamental operation of active devices, bipolar, J-FET's and MOS-FET's, as switches, logic gates, function generation, pulse and delay circuits, and memories. These fundamental operations are related to current integrated circuits, including MSI and LSI.

Profs. Cochrun and Grabel

Fall and Winter Qtrs.

03.161 Electromagnetic Field Theory I

(Prereq. 10.156, 11.207) 4 Q.H.

Definition and representation of scalar and vector fields. Coordinate systems; elements of vector calculus; definition of the concepts of gradient, divergence, curl, and the "del" operator; free-space electrostatics; definition of the electric field intensity; the scalar potential; solution to Poisson and Laplace equations; macroscopic model of dielectric materials; the electric polarization and the electric flux density vector; boundary conditions; Lorentz force; free space magnetostatics; magnetic vector potential and solution to the "vector" Poisson equation; macroscopic model of magnetic materials; magnetization and magnetic field intensity; boundary conditions.

Prof. Schwab

Fall and Winter Qtrs.

*Including lab.

03.162 Electromagnetic Field Theory II

(Prereq. 3.161) 4 Q.H.

Generalization of the Maxwell equations to the case of time-varying fields; Faraday induction law; wave equations and the plane wave solution; Poynting theorem and the concept of energy stored by the fields; reflection and refraction of plan waves; time harmonic wave equations for the scalar and vector potentials; time harmonic form of retarded potentials; radiation from a dipole; motion of charged particles in fields; magnetoionic media; elementary discussion of plasma physics and M.H.D.

Prof. Schwab

Spring and Summer Qtrs.

03.174 Basic Power Circuits

(Prereq. 3.112) 2 Q.H.

Balanced and unbalanced polyphase power circuits, harmonics, symmetrical components, and application to the solution of fault conditions in power circuits.

Prof. Cleveland

Fall and Winter Qtrs.

03.175 Electromechanical Dynamics

(Prereq. 3.113, 3.162) 4 Q.H.

Review of Maxwell's equations and quasistatic approximations, electric and magnetic energy concepts, state variable formulation of electromechanical coupling. Applications to elementary energy conversion devices, singly and doubly-excited magnetic devices with mechanical translational and rotational elements. Generalized rotating electromagnetic energy converters, circuit-model concepts, applications to selected extant rotating machines: i.e., commutator machines and a-c machines; dynamic response to various stimuli.

Prof. Cleveland

Fall and Winter Qtrs.

03.176 Machines and Systems

(Prereq. 3.174, 3.175) 4 Q.H.

A detailed investigation of the operating principles of synchronous machines, synchronous motor and generator power-angle characteristics, machine dynamics, machine and power system stability.

Prof. Cleveland

Spring Qtr.

03.183 Electrical Engineering I

(Prereq. 10.152) 4 Q.H.

Introductory course to electric circuit theory covering Kirchhoff's Laws, loop and nodal analysis, Thevenin's theorem, power and energy, exponential excitation and the system function.

Not open to E.E. majors

Prof. Grabel

Fall and Winter Qtrs.

03.184 Electrical Engineering II

(Prereq. 3.183) 4 Q.H.

Properties and analysis of electronic devices, circuits, and systems; elements of control systems; principles of energy conversion. Emphasis on each topic determined according to major discipline.

Not open to E.E. majors

Prof. Grabel

Spring and Summer Qtrs.

03.185 Power System and Controls

(Prereq. 03.183) 4 Q.H.

Basic concepts of electromechanical energy conversion stressing the terminal characteristics and operation of d-c and a-c machines, elements of power distribution systems, and concepts of feedback control, with applications to power systems and plant control.

Prof. Grabel

Spring Qtr.

03.186 Basic Electrical Instrumentation

(Prereq. 03.183) 4 Q.H.*

Basic electrical measurement devices including ammeters, voltmeters, oscilloscopes, and bridges; instrumentation techniques such as direct measurement, comparative measurement, and analog methods. Application to nonelectrical disciplines is included.

Prof. Grabel

Spring Qtr.

*Including lab.

03.187 Modelling Techniques

(Prereq. 03.183 and 03.184; also Fortran IV programming.) 4 Q.H.

Introduction to the concept of modelling techniques to represent physical, biological, and social systems; electrical analogs and use of analog computers; introduction to digital modelling and the use of digital computation.

Prof. Grabel

Fall and Winter Qtrs.

03.191 Design and Organization of Digital Computers (Prereq. or Coreq. 3.142) 4 Q.H.

Description of the basic components of a stored-program digital computer. Topics covered include: number system and binary data representation, coding and flow charting, instruction formats and repertoires, arithmetic and logical computer operations; storage of data sets and data flow within a computing system, hybrid computation, organization and control of special purpose computers, memory types and hierarchies, man-machine communications, selected examples of computer applications.

Prof. Rabinovici

All Quarters

03.218 Control System Theory

(Prereq. 3.142) 4 Q.H.

Control system concepts; goals and basic components. Review of time and frequency domain techniques. Classical control system theory; error analysis for different type systems. Analyses of second- and third-order systems. Stability and relative stability using root locus and Nyquist diagrams. The Nichols chart. Compensation, application of computer technology to control systems analysis and design. State variable description of dynamic systems. The state equations and the fundamental analog realization of the standard equations. Solution of the state equations. Properties of the state transition matrix. Optimal systems. Introduction to sampled data systems. The Z-transform as an analog to the Laplace transform.

Prof. Loewenthal

Fall and Winter Qtrs.

03.221 Electric Power Systems I

(Prereq. 3.174) 4 Q.H.

This course, along with that following it, is designed to give a broad view of the structure of those electric systems whose primary function is energy transfer, and especially those whose function is the transfer of large quantities of energy. The functions of the various system elements are described and their significant characteristics are investigated briefly. The interrelation between elements is treated.

Prof. Cogbill

Fall and Winter Qtrs.

03.222 Electric Power Systems II

(Prereq. 3.221) 4 Q.H.

A continuation of Electric Power Systems I. Problems such as voltage control, protection, economics, and planning which relate to the system as a whole. Taken with the previous course, it provides a general background for more intensive studies of electric power systems.

NOTE: A student may take both electives in sequence or may take the first course only.

Prof. Cogbill

Spring Qtr.

03.233 E.E. Power Laboratory I

(Prereq. 3.174) 2 Q.H.*

Experimental work with polyphase power equipment, power measurements, polyphase power rectification, steady-state and dynamic operation modes of polyphase induction motors, power transformers and symmetrical component analysis of unbalanced loading of transformers, analog computer.

Prof. Cleveland

Fall and Winter Qtrs.

03.234 E.E. Power Laboratory II

(Prereq. 3.172, 3.233) 2 Q.H.*

Experimental work with rotating machinery and systems; steady-state and dynamic modes of operation of the commutator and synchronous machines; system study involving synchronous machines; selected experiments in control systems; network analyzer studies.

Prof. Cleveland

Spring Qtr.

03.237 Senior Project Laboratory I

(Prereq. 3.142, 3.162) 2 Q.H.*

In this course students work with a faculty adviser on some term project, either experimental

*Including lab.

or theoretical.
Prof. Martin

03.238 Senior Project Laboratory II (Prereq. 3.142, 3.162) 2 Q.H.*

This course may be a continuation of the project started in 03.237 or it may be a new project. Again, the student works closely with a faculty adviser.
Prof. Martin

03.241 Selected Topics in Electronics (Prereq. 03.144) 4 Q.H.

A systems approach to the design of both digital and analog data-processing circuits. Circuits discussed include: shift-registers, adders, analog-to-digital and digital-to-analog converters, analog logic, function generators, and analog arithmetic units. Also included are the topics of noise in electronic circuits, and gain, frequency, and phase control.

Spring Qtr.

03.242 Theory and Technology of Semiconductor Devices I (Prereq. 2.196) 4 Q.H.*

This course comprises a closely coupled lecture and laboratory series. Topics covered include: technology and physics of the planar diffusion process, electronic properties of homogeneous semiconductors, inhomogeneities and junctions (Fermi potential diagrams, equilibrium at an abrupt discontinuity, and the behavior of a junction under applied bias), the junction transistor.

Prof. Feldman

Fall and Winter Qtrs.

03.243 Theory and Technology of Semiconductor Devices II (Prereq. 3.242) 4 Q.H.*

This course is a continuation of 03.242. Material covered includes: introduction to unipolar transistor action, introduction to surface effects, the MOS-FET, and a discussion of noise problems encountered in semiconductor devices.

Prof. Feldman

Spring Qtr.

03.251 Communication Theory (Prereq. 3.122) 4 Q.H.

Introduction to classical modulation theory, probability theory, and some recent developments in communication theory. Topics include: signal space concepts, AM and FM, pulse modulation, matched filter, autocorrelation function, sampling theorem, probabilistic description of signals, source entropy, and channel capacity.

Prof. Gonsalves

Spring Qtr.

03.261 Wave Transmission and Reception (Prereq. 09.106, 09.107) 4 Q.H.

Analysis of radiation, transmission, and reception of electromagnetic and acoustic waves using graphical and digital computer techniques. Design of distributed systems, antennas, microphones, loudspeakers, and sonar transducers.

Prof. Remillard

Spring and Summer Qtrs.

03.262 Advanced Topics in Electromagnetic Field Theory (Prereq. 3.162) 4 Q.H.

This course is a continuation of the required courses in field theory. Topics covered include (but are not limited to): microwave and waveguide structures, careful development of electromagnetic energy and force concepts, and an introduction to radiation and antenna theory.

Prof. Schwab

Spring Qtr.

03.281 Fundamentals of Computation Structures (Prereq. 3.191) 4 Q.H.

Introduction to organization principles of the General Purpose Stored Program Computer; analysis of basic logic functions employed in a digital computer system; logical structure of a central processing unit; basic arithmetic algorithms and speed-up techniques. Memory Structures, trends in memory systems organization and speed capacity trade-offs, addressing techniques and storage allocations. Logical design and physical realization of functional building blocks of automatic-digital machines.

Prof. Rabinovici

Fall and Winter Qtrs.

03.285 Introduction to Theory of Digital Computation 4 Q.H.

Elementary number theory, elements of Boolean algebra, rings and groups, combinations,

*Including lab.

permutations, and recurrence functions, study of the properties of analysis and representations of algorithms, coding of information for efficient processing. Study of finite state machines and elementary computing machines.

Prof. Weng

Spring and Summer Qtrs.

03.292 Mathematical Techniques in Electrical Engineering I

(Prereq. 10.156 or equivalent) 4 Q.H.

Definition and representation of a complex variable and of functions of a complex variable. Topics covered are: conformal mapping, singularities, Laurent series, residues, and contour integration. Applications of complex variable theory to Fourier theory, Hilbert transforms, conformal transformations in the analysis of linear systems and in electrostatics.

Prof. Carrabes

Fall, Winter, and Spring Qtrs.

03.293 Mathematical Techniques in Electrical Engineering II

(Prereq. 10.156 or equivalent) 4 Q.H.

Matrix notation and development of matrix algebra. The solubility of sets of linear equations; determinants, linear transformations, invariance, quadratic forms and eigenvalues. Illustrative applications of matrix techniques for the formulation and solution of problems drawn from the realm of circuit theory, probability theory, and engineering physics.

Prof. Carrabes

Fall, Winter, and Spring Qtrs.

03.295 Numerical Methods and Computer Applications (Prereq. 9.106, 3.122) 4 Q.H.

Presentation of numerical techniques used in solving scientific and engineering problems with the aid of digital computers. Topics covered include: modeling and simulation of deterministic and probabilistic systems, theory of interpolation, iteration methods, numerical solution of ordinary and partial differential equations, signal detection, and use of libraries of scientific subroutines. Representative problems are chosen for solution on a digital computer.

Prof. Remillard

Fall and Winter Qtrs.

03.296 Digital Techniques

(Prereq. 3.142, 3.191) 4 Q.H.

The characterization of devices, circuits and integrated structures encountered in digital systems, digital data transmission, error rates and systems parameters, synchronous-asynchronous information processing techniques related to bulk and surface storage media. Digital system reliability, failure rates, redundancy techniques. Computer-aided design, testing of digital systems, timing considerations in digital systems.

Prof. McCarthy

Spring Qtr.

Chemical Engineering

04.101 Chemical Engineering Calculations I

(Prereq. 12.115) 4 Q.H.*

Application of the fundamental laws of mass and energy conservation and equilibrium concepts to chemical and physical processes; economic considerations leading to optimal solutions. A computational laboratory is included to improve the facility of the student in handling sophisticated problems. Analog and numerical approaches are stressed where applicable.

Prof. Buonopane

Fall and Winter Qtrs.

04.102 Chemical Engineering Calculations II

(Prereq. 4.101) 4 Q.H.

Simultaneous application of energy and mass conservation laws coupled with equilibrium considerations to comprehensive problems selected from the chemical processing industries; both steady and unsteady state processes.

Prof. Buonopane

Spring and Summer Qtrs.

04.111 Chemical Engineering I

(Prereq. 4.102) 4 Q.H.

The important unit operations of chemical engineering. Fluid mechanics, heat transfer, and evaporation.

Prof. Stewart

Fall and Winter Qtrs.

*Including lab.

04.112 Chemical Engineering II

(Prereq. 4.111) 4 Q.H.

A continuation of 4.111. Drying, distillation, absorption, and extraction.

Prof. Stewart

Spring and Summer Qtrs.

04.121 Transport Phenomena I

(Prereq. 4.112) 4 Q.H.

Chemical engineering from the transport phenomena standpoint. Introduction to fluid properties, derivations of the conservation equation for mass, momentum, and energy; solutions of differential equations in conduction; unsteady state heat transfer; and laminar fluid motion.

Prof. Williams

Fall and Winter Qtrs.

04.122 Transport Phenomena II

(Prereq. 4.121) 4 Q.H.

A continuation of 4.121. Convective heat transfer, turbulent fluid motion, mass transfer by molecular and eddy diffusion, mass transfer in laminar and turbulent motion, and simultaneous heat, mass, and momentum transfer.

Prof. Williams

Spring and Summer Qtrs.

04.123 Experimental Methods I

(Prereq. 4.112) 4 Q.H.*

Experimental engineering methods; basic measurements, design of experimental apparatus, laboratory report writing, design of experiments, and data accuracy are stressed. Suitable experiments are performed.

Prof. Troupe

Fall and Winter Qtrs.

04.124 Experimental Methods II

(Prereq. 4.123) 4 Q.H.*

A continuation of 4.123 with emphasis on the development of an experimental program, reduction of data, and presentation of results; use of computers in simulating experimental conditions and for constructing mathematical models.

Prof. Troupe

Spring and Summer Qtrs.

04.126 Chemical Engineering Thermodynamics

(Prereq. 4.102, 12.167) 4 Q.H.

The first law and its application to batch and flow systems, heat effects in chemical and physical processes, thermodynamic properties, the second law, entropy, physical and chemical equilibria; emphasis on the fundamental principles and mathematical relationships and their application to the analysis and solution of a variety of engineering problems.

Prof. Goodwin

Fall and Winter Qtrs.

04.131 Process Design

(Prereq. 4.122, 4.126) 6 Q.H.*

The class participates in the process design of a chemical plant capable of producing a specified annual tonnage of a chemical when specific raw materials are available. The fundamentals of chemical engineering science, practice, analysis, and economics which have been studied in previous courses are used to prepare a report containing flow sheets, material and energy balances, designs of processing units, and cost estimates of the capital requirements for procuring, erecting, and operating the plant.

Mr. Regan

Fall and Winter Qtrs.

04.132 Process Design

(Prereq. 4.131) 6 Q.H.*

Each student or a small group of students designs a chemical plant to produce a specified annual tonnage of one or more chemicals with a specific feed stock. The techniques used in Process Design I are used by each student to prepare an individual process design report and cost estimate for the particular plant assigned.

Mr. Regan

Spring Qtr.

04.133 Projects

(Prereq. Senior student and consent of Dept.) 6 Q.H.*

Individual research related to some phase of chemical engineering. Open only to students selected by the department head on the basis of scholarship and proved ability.

Prof. Troupe and Staff

Fall and Winter Qtrs.

04.134 Projects

(Prereq. 4.133) 6 Q.H.*

A continuation of the research work undertaken in 4.133.

Prof. Troupe and Staff

Spring Qtr.

*Including lab.

04.135 Introduction to Nuclear Engineering

(Prereq. 10.156, 11.206) 4 Q.H.

Review of nuclear physics, nuclear fission, the nuclear chain reaction, reactor theory, radiation shielding, materials of construction, reactor instrumentation and control, separation of stable isotopes, chemical separation, processing and special techniques of nuclear engineering.

Prof. Buonopane

1973-74 Fall and Winter Qtrs.

04.136 Chemical Engineering Kinetics

(Prereq. 12.167, 4.126) 4 Q.H.

Fundamental theories of a rate of chemical change including collision and transition state theory in homogeneous reacting systems; integral and differential analysis of kinetic data and a design of batch and continuous flow chemical reactors; catalysis theory and design of catalytic reactors.

Prof. Goodwin

Spring and Summer Qtrs.

04.137 Applied Mathematics in Chemical Engineering

(Prereq. 10.155) 4 Q.H.

Formulation and solution of problems involving advanced calculus as they arise in chemical engineering situations. Methods covered include ordinary differential equations, series solutions, partial differential equations, and numerical solution techniques. Emphasis is placed primarily on methods for formulating these problems.

Prof. Goodwin

1973-74 Spring Qtr.

04.138 Process Control Systems

(Prereq. 10.155 or permission) 4 Q.H.

Introduction to the principles of automatic control systems. Emphasis on modeling, stability, and design of linear feed-back systems for control of temperature, liquid level, and composition.

Prof. Stewart

1973-74 Fall and Winter Qtrs.

04.141 Junior Honors Program

(Prereq. Approval of Dept.) To be assigned.

Those students undertaking a Junior Honors Program may petition for two credits for the research problem undertaken.

Prof. Troupe

Not offered 1973-74

04.142 Introduction to Optimization

(Prereq. 10.155) 4 Q.H.

Elementary optimization techniques are applied to problems encountered in the chemical processing industry. These techniques include gradient search, pattern search, linear and dynamic programming. A knowledge of differential calculus is required.

Prof. Williams

Spring Qtr.

04.143 Special Topics

(Prereq. Senior Standing) 4 Q.H.

Chemical engineering topics of interest to the staff member conducting the class are presented for study.

Prof. Troupe and Staff

Spring Qtr.

04.145 Mass Transfer Operations

(Prereq. 4.122 Transport Phenomena II) 4 Q.H.

Calculation and design methods used in processes involving mass transfer. Topics covered include vapor liquid equilibria for binary and multicomponent systems, multicomponent distillation, absorption and extraction. Emphasis is placed on methods and techniques involving digital computer computations.

Prof. Williams

Not offered 1973-74

04.146 Introduction to Nuclear Engineering (E.E.)

(Prereq. 10.156, 11.207) 4 Q.H.

Course for Electrical Engineering Power Systems students. Introduction to nuclear engineering, fundamental concepts of nuclear power, nuclear reactors and power plants, radiation protection and safety. Supplementary laboratory experiments.

Prof. Buonopane

Spring Qtr.

04.147 Analysis of Chemical Processes

(Prereq. 4.126, 4.136) 4 Q.H.

Methods and reactions used for making chemical products on a large scale. Topics covered include types of physical and chemical equilibria, flow sheet patterns, energy management,

*Including lab.

and catalytic and noncatalytic rate problems. A number of situations involving simultaneous application of the above topics in process analysis are studied.

Prof. Goodwin

Not offered 1973-74

04.148 Management in the Chemical Industries

(Prereq. senior standing in engineering) 4 Q.H.

Principles of management as applied to the chemical process industries. Case studies are used wherever possible, and outside experts are scheduled to lead some of the seminar sessions.

Prof. Troupe

Not offered 1973-74

04.149 Kinetics of Polymerization Processes

(Prereq. 4.136, 12.148) 4 Q.H.

The mechanisms by which polymeric materials are assembled via chemical reaction. Reaction rate models based on these mechanisms are utilized to investigate the effect of reaction parameters on the chemical and physical structure of the polymeric product. The types of polymerization processes considered are free radical addition, condensation, and ionic polymerization.

Prof. Williams

Not offered 1973-74

Industrial Engineering

05.128 Work Design

4 Q.H.*

Philosophy and principles of work design; use of graphic models such as process charts, operation charts, man-machine charts, etc. Work measurement techniques including stop watch, synthetic standard, and work sampling. Extensive use of projects.

Prof. Hoover

Fall and Winter Qtrs.

05.129 Manufacturing Processes

4 Q.H.*

Principles and techniques in processes for the manufacture of articles of commerce, with emphasis on process design and cost, and consideration of process control and automation; metal working, forming, machining, and bonding; job-shop tooling and techniques; plastics and rubber forming and extruding; textiles, paper, electronics, food processing, and other manufacturing operations. Principles and procedures to obtain optimum value in products, methods of revealing excessive costs; relationship of value analysis to design, manufacturing procurement, and installation.

Prof. Hulbert

Spring and Summer Qtrs.

05.130 Systems I

(Prereq. 10.146) 4 Q.H.

Linear feedback systems and solutions for steady state in first-order systems. Integral and derivative control. LaPlace transforms for continuous systems analysis and Z-transforms in discrete systems. Transfer functions.

Prof. Satia

Spring and Summer Qtrs.

05.131 Systems II

4 Q.H.

Continuation of Systems I with emphasis on applications; inventory, distribution, and information systems; introduction to simulation of large systems with analog and digital computers.

Prof. Satia

Fall and Winter Qtrs.

05.145 Probabilistic Analysis for Engineers

(Prereq. Integral & Differential Calculus) 4 Q.H.

Development of probability theory which underlies such engineering problems as inventory, queuing, and quality control. Probability theory presented axiomatically, with emphasis on sample space representation of continuous and discrete random variables. Material will cover standard distributions: i.e., normal, gamma, exponential, poisson, binomial, and others. Topics include expectation, transform techniques, change of variable.

Prof. Hoover

Spring and Summer Qtrs.

*Including lab.

05.147 Statistics I

(Prereq. 10.208) 4 Q.H.

Definition of a statistic; distributions of random variables including normal, t, chi-square, F, poisson, binomial; estimation of parameters-point estimation by method of moments, maximum likelihood, Bayes estimates.

Prof. Hoover

Fall and Winter Qtrs.

05.148 Statistics II

(Prereq. 5.147) 4q.H.

Interval estimation, stating and testing hypothesis, linear regression, analysis of variance, applied topics such as reliability, quality control, decision theory from Bayes Rule.

Spring Qtr.

05.149 Reliability and Quality Control

(Prereq. 5.147) 4 Q.H.*

Applied probability and statistical inference techniques are utilized in reliability analysis and quality control. Both theory and application are discussed in relation to the total quality assurance program.

Staff

Spring and Summer Qtrs. 1974

05.150 Industrial Cost Control

4 Q.H.

Fundamental concepts of accounting, with emphasis on use of financial records for making engineering decisions. Study of financial statements of a firm. Contrast in usefulness of data from absorption costing vs. direct costing.

Interpretation of variance accounts.

Prof. Freeman

Fall and Winter Qtrs.

05.151 World Dynamics

4 Q.H.

Feedback analysis of industrial dynamics is used to set forth a dynamic computer model of world scope to include the interactions among population, capital investment, geographical space, natural resources, pollution, and food production. The interactions of these major sectors are studied by means of the computer, and various technological and political policies are tested and evaluated over spans of up to 250 years. The quality of life is suggested as a crucial factor in world equilibrium. *Computer programming experience not necessary.*

Fall and Winter Qtrs.

05.152 Urban Dynamics

4 Q.H.

Drawing upon the feedback analysis of industrial dynamics, this course studies the growth processes of urban areas. The complex interactions between economic and social activities are sufficiently complicated to demonstrate that intuition alone cannot devise useful policies involving the growth and stagnation of industry, housing, and the movement of people. The life cycle of an urban area is examined in detail with the help of a computer model. The model is studied and manipulated to test various policies. *Computer programming not necessary.*

Spring and Summer 1974

Spring 1975

05.161 Operations Research I

4 Q.H.

Deterministic models including L.P. and duality, transportation and allocation, sensitivity and post-optimality analysis. Network analysis including maximal flow, shortest route, and PERT; dynamic programming and recursive functional expressions; game theory.

Prof. Freeman

Spring and Summer Qtrs.

05.163 Operations Research II

(Prereq. 10.208) 4 Q.H.

Stochastic models in O.R.; their analytical development and solution. Topics covered: queuing models, deterministic and stochastic inventory models, Markov chains, sequencing.

Prof. Freeman

Fall and Winter Qtrs.

05.165 Production and Inventory Control

(Prereq. 10.208 or equivalent) 4 Q.H.

Basic inventory models and inventory management systems. Single-stage and multi-stage systems and their dynamics. Production control and aggregate planning. Mathematical and heuristic approaches to aggregate scheduling. Cost structure and decision framework

*Including lab.

oriented analysis. Consideration of job-shop scheduling and dispatching problems.
 Prof. Green Spring and Summer Qtrs. 1975 and odd years.

05.166 Computer-Aided Facilities Design

4 Q.H.*

Application of quantitative techniques such as queuing theory and engineering economy to problems involving facilities planning and materials handling. Basic graphical tools, models for plant layout, and laboratory projects.

Any Quarter by Preregistration

05.169 Advanced Topics in Operations Research

(Prereq. 5.163) 4 Q.H.

Topics are: duality Kuhn-Tucker conditions, Lagrangian techniques, static and dynamic stochastic decision processes, model formulation, and analysis.

Prof. Freeman

Spring Qtr.

05.186 People in Organizations

4 Q.H.

The individual in the work environment. Work theory, motivation, and interpersonal relations based on the concepts of the behavioral sciences; structure and dynamics of organizations; problems of innovation; case studies for situational analysis to develop skill in applying behavioral concepts.

Prof. Fisher

Fall and Winter Qtrs.

05.187 Industrial Relations

4 Q.H.

Analysis of industrial relations and organized labor, with emphasis on the historical developments leading to their current status. Union organization and philosophy, interaction of management, government and labor, collective bargaining, the labor contract, the personnel function, and the engineer's role in industrial relations.

Prof. Fisher

Spring Qtr.

05.190 Senior Project

1 Q.H.

A significant industrial engineering project executed independently by the student, culminating in a well-organized and well-written report to be submitted to his class adviser and reviewed by a faculty committee. No regularly scheduled classes. Pass/fail basis.

Class Advisers

Fall and Winter Qtrs.

05.201 Principles of Computation and Programming I

4 Q.H.

Review of algorithms, computers, and programming at the FORTRAN level. Machine language programming (instruction execution and addressing techniques). Coding and representation of data and structure. Subroutines, input-output, and simultaneous operations. Assemblers and loaders. Introduction to list structures and data organization. Program debugging and verification. Survey of machines, devices, and languages.

Prof. Green

Spring and Summer Qtrs.

05.202 Principles of Computation and Programming II

(Prereq. 5.201 or permission of instructor) 4 Q.H.

Computer and programming system organization. Continuation of machine language programming from 5.201. Operating systems and supervisors. Processing of lists, strings, arrays, stacks, trees, and graphs. Survey of storage and computation equipment. Concepts of time sharing and real time. Properties and characteristics of algorithmic, list, and string processing languages to engineering problems.

Prof. Green

Fall and Winter Qtrs.

05.240 Digital Simulation Techniques

(Prereq. FORTRAN) 4 Q.H.

Design and construction of digital, discrete simulation models. Extensive use of FORTRAN and special simulation languages. Discussion of model logic and specification, testing, validation, and use. Several simulation projects using the Northeastern computer facilities.

Prof. Green

Spring and Summer

*Including lab.

05.241 Management Information Systems

4 Q.H.

Managerial applications of digital computers. The use of computers in information, decision-control systems. Information-based theories of management. Survey of information technology. Computer system basics. Cost and value of information. System design, analysis, equipment selection. Organizational implications.

Prof. Green

Fall, Winter, and Spring Qtrs.

05.245 Basic Engineering Statistics

4 Q.H.

Introduction to basic probability distributions, including the binomial and hypergeometric, exponential, poisson, and normal; laboratory data analysis; statistical test of hypotheses about central tendency and variability; curve fitting with least squares on engineering data. Not open to Industrial Engineers.

Staff

Fall, Winter, and Spring Qtrs.

05.260 Engineering Economy

4 Q.H.

The formulation of analytical techniques: i.e., rate of return, present worth, and annual cost. The application of these techniques to reach economical solutions to business and engineering problems involving design, selection, replacement, lease-buy-decisions, and decisions between multiple alternatives. Sensitivity analysis and basic probability are introduced in cases where uncertainty exists. Brief survey of sources and costs of capital, debt-versus-equity-financing, and leverage.

Prof. Satia

All Quarters

05.261 Engineering Economy and Statistical Decision Theory

(Prereq. 5.145 or 10.208) 4 Q.H.

The objective of the course is to familiarize the students with the theory and techniques of economic evaluation of investment project. Introductory steps in the analysis of investment proposals, time value of money, and cash flows; analysis of deterministic and stochastic cash flows in terms of present worth, annual cost, rate of return, and benefit/cost ratio. Decision tree for sequential decisions, criteria for decision making under uncertainty, utility theory, value of information, effect of accounting procedures and taxes on investment analysis. Case studies involving replacement, lease, engineering design, and public projects.

Staff

First Offering

Fall and Winter Qtrs. 1975

05.267 Special Topics in Engineering

(Prereq. 5.260) 4 Q.H.

Analysis of the capital structure of firms, the cost of various security types and the total cost of capital, case studies of engineering problems involving retirement-replacement decisions, lease-buy decisions and capital expenditure decisions. Consideration of the impact of income taxes, inflation, and leverage; analysis of accounting data for managerial decisions; introduction to Bayesian statistics and utility theory and their application to engineering problems involving uncertainty.

Spring Qtr. 1974 and Spring & Summer Qtrs. 1975

05.290 Independent Study in Industrial Engineering

1—4 Q.H.

For students usually in the senior year with high scholastic standing on advanced I.E. topics. Projects may be of an applied or theoretical nature; formal report submitted to student's project supervisor at the end of quarter.

Adviser

All Quarters

Engineering Technology

MECHANICAL ENGINEERING TECHNOLOGY

02.411 Mechanics A

(Prereq. 10.320, 11.317) 4 Q.H.

Forces, moments, couples, statics of particles and rigid bodies in two and three dimensions. Distributed forces: external and internal. First moments and centroids. Analysis of structures: trusses, frames and machines.

- 02.412 Mechanics B** (Prereq. 02.411) 4 Q.H.
Friction, second moments and virtual work. Kinematics of particles: rectilinear and curvilinear motion of dynamic particles. Force, mass and acceleration, work, and energy.
- 02.413 Mechanics C** (Prereq. 02.412) 4 Q.H.
Impulse and momentum of particles. Kinematics and dynamics of rigid bodies: force, mass, and acceleration. Dynamics of rigid bodies: work and energy, impulse and momentum. Introduction to mechanical vibration.
- 02.414 Stress Analysis A** (Prereq. 02.411) 4 Q.H.
Stress and deformation, mechanical properties of materials, allowable stresses and factors of safety, axially loaded indeterminate members, effects of temperature on stresses and strains, thin cylinders and spheres. Riveted and welded joints. Shear and bending moment in beams, stresses in beams, design of beams, curvature of beams.
- 02.415 Stress Analysis B** (Prereq. 02.414) 4 Q.H.
Determinate and indeterminate beam deflections and reactions by numerical and graphical integration and area moment methods; theorem of three moments. Torsional stresses and strains; power transmission; eccentric loads on struts, beams, riveted and welded joints; combined and principal stresses; Mohr's circle; theories of failure.
- 02.416 Stress Analysis C** (Prereq. 02.415) 4 Q.H.
Curved beams, non-symmetrical bending of beams, short-center and shear stresses on thin sections, composite beams. Columns, energy absorption and resilience, inertial stresses, impact loading, deflection of beams by energy methods. Bolted fastenings.
- 02.417 Mechanical Design A** (Prereq. 02.415) 4 Q.H.
Failure criteria, properties and selection of materials, manufacturing considerations, stress concentrations, strength under combined stresses, theories of failure, impact and fluctuating and repeated loads. Stresses, deformation and design of springs; screws, keys, pins and interference fits; preloading of bolted joints; shafts and flywheels; friction brakes.
- 02.418 Mechanical Design B** (Prereq. 02.417) 2 Q.H.
Lubrication and journal bearings; antifriction bearings; stresses and power transmission of spur, bevel, and worm gear; screws for power transmission.
- 02.421 Thermodynamics A** (Prereq. 11.318) 4 Q.H.
General theory of heat and matter, laws of thermodynamics, energy-transformation principles and availability of energy, properties and processes for pure substances and ideal gases. Thermodynamic properties and processes of liquids and vapors, tables and charts, mixtures of fluids, vapor cycles.
- 02.422 Thermodynamics B** (Prereq. 02.421) 4 Q.H.
Theory of vapor engines and analysis of types of actual engines using compression of gases and vapors; internal combustion engines. Theory of gas and vapor flow through orifices and nozzles. Principles of gas compression, analysis of vapor compression, refrigeration systems, low-temperature refrigeration cycles and absorption refrigeration systems.
- 02.423 Thermodynamics C** (Prereq. 02.422) 4 Q.H.
Air-conditioning principles including psychometrics and heat pumps. Calculation of heating and cooling loads in accordance with A.S.H.R.A.E. practices. Design and performance of steam and gas turbines; spark-ignition and compression-ignition engine design and performance. Fan performance.
- 02.424 Thermodynamics D** (Prereq. 02.422) 2 Q.H.
The primary modes of heat transfer; thermal conductance/resistance concept; thermal-electrical analog, combined heat transfer mechanisms; basic equations of conduction; thermal conductivity. Analytical solutions of various steady state conduction problems.
- 02.425 Thermodynamics E** (Prereq. 02.424) 4 Q.H.
Dimensional analysis and similarity considerations, natural and forced convection,

hydrodynamic and thermal boundary layers, log-mean temperature differences, overall heat transfer coefficients, applications to heat exchangers. Black body radiation; Kirchhoff's Law; emissivity and absorbance; radiation between simple bodies. Graphical and numerical methods applied to steady state, conduction problems; radiation and convection effects; transient heat transfer; numerical methods applied to transient problems; heat transfer engineering problems.

02.431 Materials A

4 Q.H.

Lectures on fundamental metallic structures; general metallurgical information covering theoretical aspects of properties, testing, and failure of metals. Supplemented by visual aids. Lectures on alloying and hardening of metals, refinement of metals, equilibrium diagrams, characteristics of engineering metals, principles of metal fabrication.

02.432 Materials B

(Prereq. 02.431) 4 Q.H.

Inorganic materials, i.e., polymers, glasses, ceramics, cements, wood; and materials having important electrical and magnetic properties. Also a summary of the most recent applications for the fabrication and uses of both metals and nonmetals. Structures of metals, imperfections, phase diagrams, effect of temperature on structure and properties of metals, (annealing, recrystallization, recovery, precipitation, diffusion), strengthening mechanisms, mechanical properties of nonferrous metals. Laboratory: experiments in preparation of samples, selection, polishing, and etching; examination of nonferrous metals, use of the microscope, linear analysis, construction of cooling curves, and simple binary phase diagrams.

02.433 Applied Metallurgy

(Prereq. 02.432) 4 Q.H.

Lectures: mechanical properties of ferrous metals, the iron carbon diagram, high-temperature alloys, hardening methods, impact tests, effects of environment on metals. Manufacturing processes, methods of fabrication, limitations on the use of different materials and processes, casting, welding, cutting, drawing, powder metallurgy. Laboratory: experiments on analysis of stress-strain diagrams of iron and steel, heat treatment of steels, surface corrosion, tempering and drawing, use of metallograph and analysis of the results. Experiments in cold rolling, swagging, drawing of nonferrous metals and the analysis of the results. Tension, shear, fatigue, and machinability tests on ferrous metals.

02.441 Fluid Mechanics A

(Prereq. 02.412) 4 Q.H.

Hydrostatics, principles governing fluids at rest, pressure measurement, hydrostatic forces on submerged areas and objects, simple dams, fluids in moving vessels, hoop tension. Fluid flow in pipes under pressure, fluid energy, power and friction loss, Bernoulli's Theorem, flow measurement.

02.442 Fluid Mechanics B

(Prereq. 02.441) 2 Q.H.

Pipe networks and reservoir systems; flow in open channels; uniform flow; energy, friction loss, minor losses, velocity distribution, alternate stages of flow, critical flow; nonuniform flow; accelerated and retarded flow; hydraulic jump and waves.

02.451 Mechanical Vibrations

(Prereq. 02.413) 4 Q.H.

Elements of vibrating systems; one degree of freedom (undamped free and forced vibration from Newton's law of motion and energy methods). Natural frequencies. Damped free and forced vibration. Impedance and mobility. Systems with more than one degree of freedom. Influence coefficients, Lagrange's equations, generalized coordinates, vibration absorber.

02.452 Experimental Stress Analysis

(Prereq. 02.415) 4 Q.H.

Theory and experimentation showing the application of extensometers and electrical strain gages as transducers in the field of experimental stress and strain analysis. Theory and laboratory practice; photoelastic methods as applied to classical model analysis and modern coating analysis.

02.461 Machine Shop

4 Q.H.

Introduction to study of machines for metal processing, cutting tools, and fluids. Machinability; automatic machinery.

02.462 Mechanical Technology Laboratory I

(Prereq. 02.431, 02.415, or concurrently) 2 Q.H.*

Experiments concerning the physical properties of materials. Instrumentation and measurement.

02.463 Mechanical Technology Laboratory II

(Prereq. 02.462, 02.441) 2 Q.H.*

Experiments concerning compressible and incompressible fluids. Experimental techniques.

02.464 Mechanical Technology Laboratory III

(Prereq. 02.463) 2 Q.H.*

Experiments of a more advanced nature. Introduction to the analog computer and experimental stress analysis.

02.465 Heat Technology Laboratory I

(Prereq. 02.442 or concurrently) 2 Q.H.*

Experiments illustrating principles of thermodynamics and heat transfer. Instrumentation and measurement.

02.466 Heat Technology Laboratory II

(Prereq. 02.465, 02.424, or concurrently) 2 Q.H.*

Experiments on various types of heat engines. Experimental techniques.

02.467 Project Lab.

(Prereq. 02.464, 02.466) 4 Q.H.*

A project of analytical, design, or experimental nature. Must be approved by student's faculty advisor. A formal report must be submitted.

ELECTRICAL ENGINEERING TECHNOLOGY

03.311 Electronics I

(Prereq. 03.303, 11.323 or 11.320) 4 Q.H.

Vacuum, semiconductor diodes; power supplies and filters. Vacuum tubes and transistors as amplifying devices. Graphical analysis of basic amplifiers; d-c and a-c load lines. Transistor biasing techniques.

03.312 Electronics II

(Prereq. 03.311) 4 Q.H.

Small-signal low-frequency transistor models. A-c equivalent circuits; low frequency amplifier circuits. Frequency effects in audio amplifiers. High-frequency transistor model. Voltage regulation.

03.313 Electronics III

(Prereq. 03.312) 4 Q.H.

Continuation of transistor circuits. Untuned amplifiers, feedback amplifiers and oscillators, low-frequency large signal amplifiers. Field effect transistor circuits.

03.323 Electronic Laboratory

(Prereq. 03.312) 2 Q.H.*

Experiments dealing with laboratory equipment techniques, transistor and crystal-diode characteristics, the impedance bridge, the Q-Meter, coils with iron cores, filter circuits, vacuum and semi-conductor diodes, power supplies including the regulated type, triode and pentode vacuum tubes, silicon-controlled rectifiers, resistance-coupled amplifiers. Transistor usage.

03.324 Circuits Laboratory I

(Prereq. 03.306) 2 Q.H.*

Experimentation in electronic circuit theory utilizing various measurement techniques. Instrumentation verification of circuit theorems; response of circuits to steps and impulses; oscilloscope theory and applications.

03.325 Circuits Laboratory II

(Prereq. 03.324) 2 Q.H.*

Further experimentation in electrical circuits and measurement techniques. Experiments include nonlinear devices, terminal characteristics of active devices, log modulus plots, network parameters and synthesis, Fourier analysis and synthesis.

03.327 Advanced Electronic Laboratory I

(Prereq. 03.323, 03.313) 2 Q.H.*

Experiments dealing with class B audio amplifier with transistors, push-pull amplifiers, drivers, and distortion measurements. Double-tuned transformers, video amplifiers, audio-frequency oscillators, and square-wave testing of audio amplifiers.

*Including lab.

03.328 Advanced Electronic Laboratory II

(Prereq. 03.327) 2 Q.H.*

Experiments dealing with operational amplifiers. Modulation of a class C amplifier, the diode detector, basic timing circuits, RF and crystal oscillators, networks in FM and television equipment, pulse and counter circuits and frequency dividers, sawtooth generators, astable (free-running) multivibrators, logic gates, frequency modulation detectors.

03.329 Advanced Electronic Laboratory III

(Prereq. 03.328) 2 Q.H.*

Spectral studies of FM and PM waves; amplitude limiters. The balance modulators and single sideband generators. Binary adders, registers and counters, radio receiver testing, television receiver demonstration, analog computers. Pulse forming and delay lines, slotted lines, and a series of five microwave experiments.

03.410 Electrical Measurements

(Prereq. 03.454) 4 Q.H.

Measurement of voltage, current, power, resistance, capacitance, inductance, impedance, frequency, etc. Direct and substitution measurements. Evaluation of measured data, standard deviation and tolerance limits, instruments calibrations. Effects of residual impedance.

03.420 Electricity and Electronics I

(Prereq. 11.319) 4 Q.H.

Introduction to circuit analysis, resistive networks, periodic excitation function, steady state a-c circuits. The physical foundations of electronics and the physical operation of electronic devices.

03.421 Electricity and Electronics II

(Prereq. 03.420) 4 Q.H.

Single-stage electronic circuits, magnetic circuits and transformers, electro-mechanical energy conversion, d-c machines, a-c machines.

03.430 Energy Conversion

(Prereq. 03.452 and 10.422) 4 Q.H.

Generalized theory of rotating energy conversion devices. Steady state operation of the multiply excited direct-current machine. Control of speed; special machines. Steady state considerations of transformers; induction and synchronous machines. Generalized machine and circuit models, transfer functions, and flow chart analysis. Laplace transform techniques as applied to the analysis of dynamic operating modes of rotating machines.

03.437 Distributed Systems

(Prereq. 10.422) 4 Q.H.

Radiation, transmission, and reception of electromagnetic waves. Distributed constants and traveling waves of transmission lines. Differential equations of the uniform line.

03.440 Physical Electronics

(Prereq. 11.420) 4 Q.H.

Electron ballistics and applications. Properties of atoms and electrons as related to conduction of electricity in solids. Fundamentals of semiconductors, crystal diodes, and transistors. Theory of field-effect transistors, integrated circuits, and photoelectric devices.

03.451 Circuit Analysis I

(Prereq. 10.320, 11.319) 4 Q.H.

Ohm's law, Kirchoff's current and voltage laws, equivalent resistances and sources, mesh and modal analysis, network theorems, two-port networks and power relations—all with respect to direct currents. Energy storage, singularity functions; response of R, L, and C elements to singularities.

03.452 Circuit Analysis II

(Prereq. 03.451) 4 Q.H.

Complex, algebra, phasors, frequency domain, mutual inductance, transformers, steady-state a-c theory, driving point and transfer impedances, power and energy in a-c circuits. Laplace transforms; partial fraction expansion; Laplace transform techniques applied to the solution of RLC networks.

03.453 Circuits Analysis III

(Prereq. 03.452) 4 Q.H.

Application of differential equations to the solutions of linear, time-invariant electrical networks. Introduction to singularity functions, convolution, and time domain transient analysis. Network topology and duality, introduction to the methods of transformation

*Including lab.

calculus and complex frequency concepts.

03.454 Circuits Analysis IV

(Prereq. 03.453) 4 Q.H.

Signal analysis in the frequency domain. Fourier series. Fourier and Laplace transform methods. A varied selection of circuit problems are solved using Laplace transform methods. A varied selection of circuit problems are solved using Laplace transforms and related theorems.

03.460 Engineering Analysis I

(Prereq. 10.422 and 03.452) 4 Q.H.

Linear algebra and its application to circuit equations. Solution of linear differential equations, including an introduction to Laplace transforms.

03.461 Engineering Analysis II

(Prereq. 10.422) 4 Q.H.

Complex variables and their relevance to an electrical engineering program.

03.470 Digital Computers

(Prereq. 03.313 or concurrently) 4 Q.H.

Introduction to the field of digital computer design. Topics include: general computer organization, number systems and number representations, design characteristics of major computer units, Boolean Algebra applications to computer design.

03.447 Control Engineering I

(Prereq. 03.454 and 10.422) 4 Q.H.

Analysis of linear servomechanisms under both transient and steady state conditions. Signal flow graphs. Laplace transforms used in the formulation of block diagrams and transfer function.

03.478 Control Engineering II

(Prereq. 03.477) 4 Q.H.

System stability. Root locus techniques. Treatment of Nyquist criteria and Bode diagram methods for systems evaluation.

03.490 Optical Instrumentation

(Prereq. 10.308 and 10.319) 4 Q.H.

Telescopes, microscopes, and other optical instruments as optical system components. Includes magnification, aberrations, resolution criteria, photometry. Compatibility of system components and optimization of systems. The basic nonimage-forming systems used for analysis control and metrology.

CHEMICAL ENGINEERING TECHNOLOGY

04.481 Nuclear Technology

(Prereq. 10.422 and 11.319) 4 Q.H.*

Atomic and nuclear structure; discovery and nature of radioactivity. Nuclear reactions and energy, induced nuclear transformations, neutron properties, applications of radio nuclides. Radiological safety: nuclear instrumentation for particle detection, monitoring, and experimentation. The fission process and its applications; nuclear reactors—their classification design and application; nuclear fuel processing; radioactive waste disposal. Supplement laboratory experiments.

Graphic Science

09.104 Computer Programming

2 Q.H.

A special course offered primarily for engineering transfer students covering elementary programming methods using the FORTRAN language. Emphasis is on general programming, but examples are chosen from the various branches of engineering.

Prof. Rule

Fall Qtr.

09.106 Basic Engineering

4 Q.H.

Introduction to engineering. Basic methods of communication (engineering drawing and pictorial representation). Use of the computer in engineering (FORTRAN programming). Input/output considerations, control statements including DO loops, subscripted variables.

Prof. Rule and Staff

Fall, Winter, and Spring Qtrs.

*Including lab.

09.107 Basic Engineering

(Prereq. 09.106) 4 Q.H.

Introduction to the design process. Involvement in original design projects requiring creative conceptual solutions. Review of several case studies showing the role of an engineer in problem solving. Continuation of computer programming as it applies in engineering. Use of the IBM Scientific Subroutine Package, computer graphics, numerical procedures.

Prof. Rule and Staff

Winter, Spring, and Summer Qtrs.

09.114 Introduction to Computers

2 Q.H.

A course given for biomedical majors, covering elementary aspects of FORTRAN programming as it applies to solving medical and engineering problems. Subscripted variables and nested DO loops are covered.

Prof. Rule

Winter Qtr.

09.115 Computer Programming

(Prereq. 09.114) 2 Q.H.

Higher-level programming techniques are developed, including writing of subprograms and making use of scientific subroutine packages. Graphical output using the CalComp plotter is covered.

Prof. Rule

Spring Qtr.

09.421 Principles of Computer Programming I

2 Q.H.

Rules for forming simple FORTRAN programs. Basic input/output techniques. FORMAT control. Algorithms for solving simple scientific problems. Computing large sums; maxima and minima in both discrete and continuous cases.

Prof. Rule and Staff

Fall and Winter Qtrs.

09.422 Principles of Computer Programming II

(Prereq. 9.421) 2 Q.H.

Extended capabilities of the FORTRAN language. Manipulation of vectors and arrays. Subroutine and function subprogramming. Continued applications of computers, sorting, merging, root determination. A-Format.

Prof. Rule and Staff

Winter and Spring Qtrs.

09.423 Principles of Computer Programming III

(Prereq. 9.422) 2 Q.H.

Use of scientific subroutines, simulation, random numbers. Introduction to numerical methods (solution of simultaneous equations, quadrature, derivatives). Use of plotter language. Display of information.

Prof. Rule and Staff

Spring Qtr.

09.461 Engineering Design Graphics I

2 Q.H.

Introduction to engineering drawing. Orthographic projection and primary auxiliary views. Reading and interpreting of multiview drawings. Isometric and oblique pictorial representation.

Prof. Rule and Staff

Fall and Winter Qtrs.

09.462 Engineering Design Graphics II

(Prereq. 9.461) 2 Q.H.

Emphasis on engineering drawings required to support engineering design, including standard conventions, dimensioning, and basic production processes. Shop detail drawings are covered. Exercise in design processes are given through selected projects and case studies.

Prof. Rule and Staff

Winter and Spring Qtrs.

09.463 Engineering Design Graphics III

(Prereq. 9.462) 2 Q.H.

Greater involvement in design by examination of many commonly used components. Case studies of large systems discussed in class. Advanced design projects assigned.

Prof. Rule and Staff

Spring Qtr.

Mathematics

10.100 Introduction to College Mathematics

4 Q.H.

10.101 Basic Mathematics

3 Q.H.

Development of real numbers and the algebraic operations, with emphasis placed on the field postulates. Study of polynomials, fractions, exponents, radical expressions, 1st- and 2nd-degree equations, solutions of inequalities.

Prof. Claflin

Fall Qtr.

10.102 Basic Mathematics

(Prereq. 10.101) 3 Q.H.

Functions and relations, graphs, simple forms of conic sections, variation, exponential and logarithmic functions, systems of equations and inequalities.

Pfor. Claflin

Winter Qtr.

10.103 Basic Mathematics

(Prereq. 10.102) 3 Q.H.

Complex numbers, theory of equations, sequences and series, probability.

Prof. Claflin

Spring Qtr.

10.104 Fundamentals of Mathematics

(Prereq. one unit high school algebra) 4 Q.H.

Formation of linear equations and their use as models; systems of linear equations and linear inequalities; introduction to linear programming; vectors and matrices and their use in solving linear systems of equations.

10.105 Fundamentals of Mathematics

(Prereq. 10.104 or equivalent) 4 Q.H.

Logarithms, differentiation of functions and applications of the derivative, elements of probability.

10.106 Calculus

(Prereq. 3½ units of college prep. math. or 10.103, 10.105) 4 Q.H.

A first course for upper-class students. Differential calculus for functions of one variable, topics in analytic geometry, integration, applications of differentiation and integration.

10.107 Calculus

(Prereq. 10.106) 4 Q.H.

Techniques of differentiation and integration: partial differentiation, multiple integration, applications to geometry of three dimensions.

10.108 Probability, Statistics and The Computer

4 credits for non-Science majors

Winter, Spring and Summer Qtrs.

10.120 Introduction to Computers

(For non-Math majors; no Math. prereq.) 4 Q.H.

A nontechnical introduction to computers, their abilities and shortcomings, and their impact on learning society. Some of the questions to be raised are: Can computers think? How do computers compose music, play chess and write poetry? Can computers reproduce? How does a computer work? What can be done about the data bank menace? Although this is not a course in computer programming, the student will learn to convince (i.e., program) the computer to do simple tasks for him.

Fall and Winter Qtrs.

10.124 Fundamentals of Mathematics

4 Q.H.

Study of operations involving real numbers, including factoring, exponents, functions, and quadratic equations. The course also covers matrices, determinants, and logarithms.

10.125 Fundamentals of Mathematics

4 Q.H.

Exponential and logarithmic functions; differential calculus, including definitions of derivative; power rule, chain rule, product and quotient rules; maximum and minimum theory; integral calculus, including definite and indefinite integrals; introduction to probability.

10.126 Mainstreams of Mathematics

4 Q.H.

10.140 Mathematical Analysis IV-V

(Prereq. freshman calculus or equiv.) 5 Q.H.

Designed to prepare transfer students for numerical analysis and differential equations. Linear algebra, vector-valued functions, functions of several variables, multiple integration, infinite series, Taylor's theorem, complex numbers.

10.150 Calculus

4 Q.H.

A first course in calculus of one variable, primarily for students in the College of Engineering.

Differentiation, integration, and elementary applications. Interpolation, numerical integration, first- and second- order differential equations, vectors.

10.151 Calculus (Prereq. 10.150) 4 Q.H.

A continuation of 10.150.

10.152 Calculus (Prereq. 10.151) 4 Q.H.

A continuation of 10.151.

10.153 Calculus (Prereq. 10.152) 4 Q.H.

Solid analytic geometry, vectors, infinite series, partial derivatives, with applications.

Prof. Frampton

Fall and Winter Qtrs.

10.154 Calculus (Prereq. 10.153) 4 Q.H.

Multiple integration, complex variables, with applications. Complex numbers, linear algebra, and systems of linear differential equations.

Prof. Frampton

Spring and Summer Qtrs.

10.155 Mathematical Analysis (Prereq. 10.154) 4 Q.H.

Ordinary differential equations, with emphasis on methods of solution. Includes first-order equations, second-order linear equations with constant coefficients, and systems of first-order linear equations. (Intended primarily for engineering students.)

Fall and Winter Qtrs.

10.156 Mathematical Analysis (Prereq. 10.155, and 9.107 or 9.105) 4 Q.H.

Part 1: Introduction to numerical analysis. The digital computer is used in root-evaluation, interpolation, and solution of differential equations.

Part 2: Fourier series and boundary value problems for partial differential equations. (Intended primarily for engineering students.)

Spring and Summer Qtrs.

10.160 Calculus for Biology Majors 4 Q.H.

A first course in calculus with inspiration from and applications to biology. Differentiation and integration of functions of one variable. Partial derivatives. Multiple integration, Taylor's formula and approximation methods.

Fall Qtr.

10.161 Calculus for Biology Majors II (Prereq. 10.160) 4 Q.H.

Continuation of 10.160.

Winter Qtr.

10.162 Calculus for Biology Majors III (Prereq. 10.161) 4 Q.H.

Continuation of 10.161.

Spring Qtr.

10.170 Geometry (Prereq. a course in calculus) 4 Q.H.

Selected topics from advanced plane geometry in Euclidean style: i.e., collinear points, concurrent lines, duality, cross-ratio, harmonic division of segments, homogeneous coordinates, abridged notations, special theorems concerning points, lines, triangles, and circles (Euler, Desargues, Lemoine, Brocard, Brianchon, Feuerbach); the nine-point circle, inversion, reciprocation.

Prof. Dean

Fall and Winter Qtrs.

10.171 Geometry (Prereq. 10.170) 4 Q.H.

Discussion of Euclid's definitions and postulates; examination in detail of the fifth postulate and other items leading to non-Euclidean geometry. Some special topics in non-Euclidean geometry of the hyperbolic and elliptic planes.

Prof. Dean

Spring and Summer Qtrs.

- 10.181 Calculus I** 5 Q.H.
 Derivatives and integrals of functions of one variable. Approximation methods including numerical integration, Newton's method, Taylor series, and power series. Brief introduction to differential equations, partial derivatives, and multiple integrals. Students will be encouraged to solve selected problems on the computer.
 Prof. Gilmore Fall Qtr.
- 10.182 Calculus II** (Prereq. 10.181) 5 Q.H.
 Continuation of 10.181.
 Prof. Gilmore Winter Qtr.
- 10.183 Calculus III** (Prereq. 10.182) 5 Q.H.
 Continuation of 10.182.
 Prof. Gilmore Spring Qtr.
- 10.184 Calculus and Linear Methods I** (Prereq. 10.183) 4 Q.H.
 Methods of calculus combined with vector analysis, used to study curves, surfaces and functions of several variables. Topics include: parameterization of lines and planes, tangents and normal vectors, partial derivatives, maxima and minima problems, linear approximation, and tangent planes. Some linear algebra.
 Prof. Bridger Fall and Winter Qtrs.
- 10.185 Calculus and Linear Methods II** (Prereq. 10.184) 4 Q.H.
 Continuation of 10.184. Multiple integration, line integrals, and exact differentials; various forms of Stokes' Theorem. More linear algebra.
 Prof. Bridger Spring and Summer Qtrs.
- 10.186 Differential Equations and Linear Methods I** (Prereq. 10.183) 4 Q.H.
 Methods of solving first- and second-order differential equations and systems of first-order equations. Numerical solution of differential equations. The use of linear algebra is emphasized and the necessary techniques developed.
 Prof. Kopell Fall and Winter Qtrs.
- 10.187 Differential Equations and Linear Methods II** (Prereq. 10.186) 4 Q.H.
 Continuation of systems of first-order equations, eigenvalue problems, special second-order equations (especially those which arise in physics), power series solutions, orthogonal polynomials. Fourier series and Laplace transforms if time permits.
 Prof. Kopell Spring and Summer Qtrs.
- Note: As a rule, students should take 10.186 and 10.187 in parallel with 10.184 and 10.185.*
- 10.207 Differential Equations** (Prereq. 10.183 or equiv.) 4 Q.H.
 Intended primarily for chemists and industrial engineers. Topics covered include the initial-value program for first- and second-order differential equations; the two-point boundary value problem for second-order differential equations.
 Spring and Summer Qtrs.
- 10.208 Probability** (Prereq. 10.154 or 10.185) 4 Q.H.
 Probability functions for finite and infinite spaces; conditional probability and independence; discrete and continuous probability distributions for one or more random variables; expectation; moments; binomial, Poisson, and normal distributions; central limit theorem.
 Prof. Stubbs Fall and Winter Qtrs.
- 10.209 Advanced Probability Theory** (Prereq. 10.208) 4 Q.H.
 Fall and Winter Qtrs.
- 10.211 Fortran and Forgo I** 1 Q.H.
 Introduction to computer programming via FORGO language. Development of simple

mathematical models and their solution by computers. Elementary numerical methods, flow charting.

10.212 Fortran and Forgo II (Prereq. 10.211) 1 Q.H.
Continuation of 10.211.

10.213 Fortran and Forgo III (Prereq. 10.212) 1 Q.H.
Continuation of 10.212.

10.214 Systems Programming (Prereq. consent of instructor) 4 Q.H.

10.220 Mathematical Statistics (Prereq. 10.208) 4 Q.H.
Estimation of parameters, confidence intervals, hypothesis testing, regression, sampling distributions. Introduction to analysis of variance and statistical decision theory.
Prof. Stubbs Spring and Summer Qtrs.

10.221 Applied Analysis (Prereq. 10.251 and 10.246, or equivalents) 4 Q.H.
Linear analysis, with applications to linear ordinary differential equations. Other topics in differential equations, such as separation and comparison theorems, and the Laplace transform.
Prof. Wils (Fall) and Prof. Filgo (Winter) Fall and Winter Qtrs.

10.222 Applied Analysis (Prereq. 10.222) 4 Q.H.
Linear analysis continued: orthogonal series, partial differential equations, with application to boundary-value problems in the study of mechanical vibrations and heat conduction.
Prof. Wils (Spring) and Prof. Filgo (Summer) Spring and Summer Qtrs.

10.223 Numerical Analysis (Prereq. two years of calculus, FORTRAN programming) 4 Q.H.
A computer-oriented introductory course in numerical analysis. Methods for finding numerical solutions of nonlinear equations, systems of linear equations, ordinary differential equations, curve-fitting and interpolation problems, and evaluation of definite integrals are analyzed and programmed on a digital computer.

10.224 Numerical Analysis (Prereq. 10.223) 4 Q.H.
A continuation of 10.223.

10.226 Functions of a Complex Variable (Prereq. 10.184 or equiv.) 4 Q.H.
Algebra and geometry of complex numbers. Concepts of limit, continuity, and derivative in the complex domain. Holomorphic functions, series, contour integration. Applications.
Fall and Winter Qtrs.

10.230 Linear Programming (for non-Math majors) (Prereq. one year of college mathematics) 4 Q.H.
Introduction to concepts and techniques of linear programming, game theory, stochastic processes. Applications to economics, social sciences, and other related fields.
Prof. Hajian Fall and Winter Qtrs.

10.232 Multivariate Statistics (Prereq. 10.220) 4 Q.H.
Methods of classification, estimation, and prediction based on several statistical variables.
Offered 1973-74, Spring and Summer Qtrs.

10.240 Mathematical Models in the Life Sciences (Prereq. one year of Calculus) 4 Q.H.
A course in the derivation and solution of mathematical models in the area of biology, psychology, and the social sciences. Such phenomena as population dynamics, diffusion processes, pollution, control systems, neural networks, and mathematical genetics are studied.

10.241 Mathematical Models in the Life Sciences (Prereq. 10.240) 4 Q.H.
A continuation of 10.240.

10.246 Advanced Linear Algebra I (Prereq. 10.187 or permission of instructor) 4 Q.H.
Vector spaces. Survey of main examples. Dimension. Detailed analysis of the behavior of a

linear transformation, with an emphasis on what kinds of phenomena can occur. Use of invariant subspaces and eigenvalues. Symmetric and orthogonal maps; iteration of linear maps. Linear, bilinear, and quadratic forms. Brief study of issues arising in practical computations.

Prof. Rasala

Fall and Winter Qtrs.

10.247 Advanced Linear Algebra II

(Prereq. 10.246) 4 Q.H.

Lattices and linear algebra with integer coefficients. Congruences, modular arithmetic, and finite fields. The idea of a group; groups of linear and affine transformations; symmetry groups in the plane. If time permits, additional topics are chosen from the following areas: symmetry groups in space and crystallography; group theory as applied to function theory and/or physics; group representations; coding theory.

Prof. Rasala

Spring and Summer Qtrs.

Note: Upper-level students who have not completed the 10.181-10.187 program may take 10.246-10.247. Such students should see the instructor in the course and inform him of their particular background.

10.250 Analysis I

(Prereq. 10.187 or consent of instructor) 4 Q.H.

The theoretical underpinnings of the calculus: limits, measure, continuity, and related concepts. Analysis I and II are intended to serve as a bridge between the 10.281-287 calculus sequence and the more advanced analysis courses such as 10.221-2, 10.226, and 10.264-5.

Prof. Stolzenberg

Fall and Winter Qtrs.

10.251 Analysis II

(Prereq. 10.250) 4 Q.H.

Continuation of 10.250. Once through the calculus again, armed with the concepts introduced in Analysis I.

Prof. Stolzenberg

Spring and Summer Qtrs.

10.256 Algebra

(Prereq. 10.246) 4 Q.H.

Theory of fields: field extensions, automorphisms, Galois theory. Applications to theory of equations.

10.257 Optimization and Mathematical Game Theory

(Prereq. Some linear algebra. E.g., 10.246 or consent of instructor) 4 Q.H.

Convex sets in Euclidean n -space, linear and nonlinear programming, zero-sum games, dynamic programming. Students are encouraged to program selected solution methods for a computer.

Prof. Warga

Winter and Spring Qtrs.

10.264 Recent Ideas in Geometry

(Prereq. 10.251 and 10.247 or consent of instructor) 4 Q.H.

Topics chosen by the instructor may vary each year. Topological classification of surfaces, theory of critical points and singularities of mappings, topological study of vector fields, knot theory, graph theory, differential geometry of surfaces, algebraic curves, homotopy.

Prof. Blank

Fall and Winter Qtrs.

10.265 Recent Ideas in Geometry

(Prereq. 10.264) 4 Q.H.

Continuation of 10.264.

Prof. Blank

Spring and Summer Qtrs.

10.271 Foundations of Mathematics

(Prereq. 10.250 or equivalent) 4 Q.H.

Logic and set theory.

Fall and Winter Qtrs.

To be offered alternate years.

10.272 Foundations of Mathematics

(Prereq. 10.271) 4 Q.H.

Continuation of 10.271.

Spring and Summer Qtrs.

To be offered alternate years.

10.273 History of Mathematics

4 Q.H.

Development of the various branches of mathematics; lives of outstanding mathematicians; growth of mathematical knowledge and its relation to culture.

10.274 Number Theory

(Prereq. 10.246) 4 Q.H.

The properties of positive integers, divisibility, congruences, quadratic residues, Diophantine equations.

10.281-10.289 Directed Study

(Prereq. consent of instructor)

Programs of directed study, held one or more quarters, are available for highly motivated students who wish to explore mathematical phenomena and theories more deeply. In particular, a freshman-sophomore directed study program, emphasizing discussion of concepts and independent research, runs concurrently with the calculus sequence (beginning in the winter of the freshman year). Past discussions have included these topics: measure by covering and packing, lattices, symmetry, theory of numbers, and classification of surfaces.

All Quarters

10.295, 10.296, 10.297, 10.298 Honors Program**10.307 College Algebra and Trigonometry**

(Prereq. Math. Placement Test or 10.302) 4 Q.H.

Fundamental operations of algebra, algebraic fractions, exponents and radicals, functions. Trigonometric functions of angles both in degree and in radian measure; right triangles; identities and equations.

10.308 College Algebra and Trigonometry II

(Prereq. 10.307) 4 Q.H.

Quadratic equations and applications, radical equations, complex numbers, binomial expansion, variation, roots of polynomial equations. Trigonometric graphs, other transcendental functions, logarithms, inverse trigonometric functions.

10.320 Calculus I

(Prereq. 10.308, 10.329, or 10.335) 4 Q.H.

Functions, graphs, and limits; study of the straight line, the circle, the parabola; differentiation of algebraic functions, with applications, including curve-sketching.

10.421 Calculus A

(Prereq. 10.320) 4 Q.H.

Applications of derivatives to curve-sketching, antidifferentiation, the definite integral with applications, calculus of non-algebraic functions—logarithmic, exponential, and trigonometric. Calculus of inverse trigonometric functions, techniques of integration, polar coordinates, the conic sections, vectors in a plane, indeterminate forms, L'Hopital's rule.

10.422 Calculus B

(Prereq. 10.421) 4 Q.H.

Calculus of functions of several variables, partial differentiation, multiple integrals, infinite series. Vector analysis; matrices and linear algebra.

10.423 Differential Equations

(Prereq. 10.422) 4 Q.H.

Ordinary differential equations—standard types of the first order; linear differential equations, especially with constant coefficients; Laplace transforms; series solutions of differential equations. Fourier series and orthogonal functions.

Physics

This Department rotates its teachers.

11.108 Physics in Sports

(No prereq.) 4 Q.H.

Some of the physical principles involved in sport. Topics include: sailing, skiing, baseball, tennis, gymnastics, and caloric considerations.

Spring Qtr.

11.109 Physics in Music

(No prereq.) 4 Q.H.

Explores the physical nature of modern music production and reproduction; relates the

aesthetic and physical problems encountered and treats their mutual influence. Topics include: the basics of sound production and manipulation, the physical and psychological response of the ear, musical notation, details of instrumental design, construction and operation, modern music reproduction from initial detection through living room listening, and acoustic environment.

Winter and Spring Qtrs.

11.110 Physics Laboratory for Engineering Students I 1 Q.H.*

The first quarter of a two-quarter laboratory sequence in which the student performs experiments from various fields of physics.

Fall and Winter Qtrs.

11.111 Physics Laboratory for Engineering Students II (Prereq. 11.110) 1 Q.H.*

Continuation of 11.110.

Spring and Summer Qtrs.

11.112 Physics of Fluids 3 Q.H.*

The physical properties of gases and liquids, with emphasis on their application to the health services. Force and pressure, hydrostatics, fluid flow, the ideal gas law, real gases, condensation and evaporation, surface tension, osmosis. An introduction to electricity is given if time permits.

Fall Qtr.

11.113 Physics for Criminal Justice Students I 4 Q.H.

The first quarter of a two-quarter course intended to serve both as a basis for advanced study of criminalistics and an introduction to the physical sciences for students specializing in other areas of criminal justice. A broad range of topics is covered, from ballistics to atomic and molecular structure. Emphasis is placed on physical fundamentals rather than on mathematical rigor. Examples taken from case histories are used to illustrate the application of basic physical laws in realistic crime-lab and courtroom situations. These include: calculation of bullet and blood-spatter trajectories, possible and impossible traffic violations, the cooling curve of cadavers and its relation to the time of death, the human vocal frequency spectrum and the use of "voice-prints", the optical spectrum and spectroscopic identification of materials, Doppler shift and radar speed measurements, and the relation of microscopic structure to the fracture and deformation properties of solids.

Fall and Winter Qtrs.

11.114 Physics for Criminal Justice Students II 4 Q.H.

Continuation of 11.113.

Spring and Summer Qtrs.

11.115 Physics for the Humanities Students I (Fundamentals of Physics) 4 Q.H.

The first quarter of a two-quarter sequence intended primarily for students in the humanities and social sciences. Some of the basic concepts governing the physical universe (time, space, motion) are established without using more mathematics than simple algebra. The course then proceeds to a nontechnical description of the origins of many of the interesting phenomena encountered in nature: gravity, sound, light, radioactivity. Historical, social— as well as practical— aspects of developments in physics all receive some degree of treatment in the course of study. Classroom discussion and demonstrations form an integral part of the instructional mode.

Fall and Winter Qtrs.

11.116 Physics for the Humanities Students II (Prereq. 11.115) 4 Q.H.

Continuation of 11.115.

Spring and Summer Qtrs.

11.117 Physics for Science Majors

(Prereq. a beginning calculus course concurrently) 4 Q.H.

Mechanics: kinematics, Newton's laws, circular motion, inclined planes, conservation laws,

*Including lab.

collisions, potential energy diagrams, harmonic motion.

Fall and Winter Qtrs.

11.118 Physics for Science Majors II

(Prereq. 11.117) 4 Q.H.

Thermodynamics and relativity: kinetic theory, the First Law and work, ideal gases, heat engines, relativity.

Fall and Winter Qtrs.

11.119 Physics for Science Majors III

(Prereq. 11.117) 4 Q.H.

Waves and electricity: the wave equation in one dimension, superposition, waves in two dimensions, interference and physical optics; electrostatics, Gauss's law, potential and line integrals; Bohr atom, deBroglie waves, photoelectric effect, X-ray diffraction; charged particles in magnetic fields.

Spring and Summer Qtrs.

11.124 Physics Laboratory for Science Majors

1 Q.H.*

The first quarter of a two-quarter laboratory sequence in which students perform experiments from various fields of physics.

Fall and Winter Qtrs.

11.125 Physics Laboratory for Science Majors II

(Prereq. 11.124) 1 Q.H.*

Continuation of 11.124.

Spring and Summer Qtrs.

11.126 Physics Review

(Prereq. one year of physics) 6 Q.H.

A special review course on the material of 11.203, 11.204, 11.205, and 11.206. The course is geared to the student's actual needs. Passing is equivalent to passing 11.206.

Fall Qtr.

11.127 Physics for Science Majors IV

(Prereq. 11.119) 4 Q.H.

Electricity and magnetism: review of electrostatics, Maxwell's equations in integral form, radiation and velocity of light; DC and AC circuits, impedance, electrical oscillations and mechanical analogs, damped oscillations, resonance; geometrical optics.

Fall and Winter Qtrs.

11.128 Physics for Science Majors V

(Prereq. 11.119) 4 Q.H.

The electromagnetic force: qualitative description of molecular interaction, dipoles, van der Waals equation, real gases, condensation pV diagrams for gases, liquids, solids, crystals; angular momentum conservation, Bohr atom and quantization, Pauli principle, spin. Periodic table.

Spring and Summer Qtrs.

11.139 Physics and Established Thought

4 Q.H.

The major effects of physics on Western culture. Concepts are covered in breadth rather than in depth. Some of the major historical conflicts in Western culture are discussed and the role of physics in these conflicts developed. Students should gain a broad knowledge of the scientific method and an understanding of conflicts between science and society from the course. Topics covered include: cosmology and anthropomorphism, causality and free will, physics evolution and ESP, and physics and intuition.

Spring Qtr.

11.171 Physics for the Life Science I

(Basic Physics) 4 Q.H.

Vector addition of force, principles of statics, Newton's second law, kinetic and potential energy, pressure, static properties of fluids, fluid flow.

Fall and Winter Qtrs.

11.172 Physics for the Life Sciences II

(Prereq. 11.171) 4 Q.H.

Wave motion, sound, light, optics, static electricity, DC circuits, magnetism.

Spring and Summer Qtrs.

*Including lab.

11.173 Physics Laboratory for the Life Sciences I 1 Q.H.*

The first quarter of a two-quarter laboratory sequence that accompanies 11.171 and 11.172. The student performs experiments from various fields of physics.

Fall and Winter Qtrs.

11.174 Physics Laboratory for the Life Sciences II (Prereq. 11.171) 1 Q.H.*

Spring and Summer Qtrs.

11.175 Physics for the Life Sciences III (Prereq. 11.171) 4 Q.H.

Temperature, gas laws, properties of liquids (surface tension and osmotic pressure), properties of solids, thermal physics, Coulomb's law, atomic and nuclear physics.

Spring and Summer Qtrs.

11.176 Physics for Psychology I 4 Q.H.*

The first quarter of a two-quarter sequence intended primarily for Psychology majors. Light, sound, electricity, and magnetism are emphasized. Sufficient mechanics is introduced for understanding of the concept of energy. Topics in modern physics, such as atomic and nuclear structure and cosmology, are also discussed. The laboratory is closely coordinated with the lectures.

Fall Qtr.

11.177 Physics for Psychology II 4 Q.H.*

Continuation of 11.176.

Winter and Spring Qtrs.

11.180 The Structure of the Universe I (No prereq.) 4 Q.H.

This course aims at introducing modern ideas in astrophysics and cosmology to the student whose field of interest is nonscientific. Since the structure of the very large is often remarkably influenced by the properties of the very small, subject material ranges from the nature of the atomic nucleus to the behavior of the most distant galaxies. Topics considered include the age and origin of the universe, the expanding universe, the life cycle of stars, how stars shine, supernovas, origin of the chemical elements, formation of the solar system, galaxies. Mathematical discussion is restricted to arithmetic and elementary geometry.

Fall and Winter Qtrs.

11.181 The Structure of the Universe II (Prereq. 11.180) 4 Q.H.

Continuation of 11.180.

Spring Qtr.

11.182 Introduction to Astrophysics and Cosmology

(Prereq. 11.119 or 11.205 or equivalent) 4 Q.H.

The aim of this course is to introduce current ideas in astrophysics and cosmology to the student with an elementary background in physics. Discussions include the many recent discoveries and ideas which, over the past decade, have revolutionized much astronomical thinking about the universe, cosmological theories of its origin and age, origin of stellar energy, formation and evolution of stars, supernovas, pulsars, black holes (origin and abundance of elements), quasars, structure of galaxies. Radio and high energy astronomy are discussed. Mathematical analyses are mostly at the level of elementary geometry and simple algebra.

Winter Qtr.

11.200 Intermediate Mechanics (Prereq. 11.128 or 11.205, and 10.205 or 10.145) 4 Q.H.

The first quarter of a two-quarter sequence in classical mechanics. Vector analysis, kinematics and dynamics of particle motion, generalized coordinates, and Lagrange's equations of motion.

Fall and Winter Qtrs.

11.201 Theoretical Mechanics (Prereq. 11.119) 4 Q.H.

Conservation theorems, central force motion, systems of particles, rigid body motion,

Hamilton's equation.

Spring and Summer Qtrs. of odd years.

11.203 Physics for Engineering Students I

(Elementary Physics) 4 Q.H.

The first quarter of a four-quarter sequence intended primarily for engineering students. The student is assumed to be taking a four-quarter calculus sequence concurrently. The aim of the course is to give the student a working knowledge of physics. The first quarter deals with vector algebra and the dynamics of particle motion.

Fall and Winter Qtrs.

11.204 Physics for Engineering Students II

(Prereq. 11.203) 4 Q.H.

Continuation of 11.203. Conservation laws and their use in solving problems in elementary dynamics. Wave motion and vibrating systems.

Winter and Spring Qtrs.

11.205 Physics for Engineering Students III

(Prereq. 11.204) 4 Q.H.

Continuation of 11.204. Electricity and magnetism.

Spring and Summer Qtrs.

11.206 Physics for Engineering Students IV

(Prereq. 11.205) 4 Q.H.

Continuation of 11.205. Circuit theory, electromagnetic waves, light.

Fall and Winter Qtrs.

11.207 Elementary Modern Physics

(Prereq. 11.206 or 11.128) 4 Q.H.

Special relativity and quantum physics. The properties of light and the structure of atoms and nuclei. Primarily intended for Engineering and Chemistry majors.

Spring and Summer Qtrs.

11.208 Mathematical Physics

(Prereq. 11.128 or 11.206 and 10.205 or 10.145) 4 Q.H.

Review of linear algebra and vector calculus. Special functions and partial differential equations of physics. Potential theory. Functions of a complex variable.

Spring and Summer Qtrs. in even years.

11.21A (B, C, etc.) Independent Study

1 Q.H.

11.22A (B, C, etc.) Independent Study

2 Q.H.

11.23A (B, C, etc.) Independent Study

3 Q.H.

11.24A (B, C, etc.) Independent Study

4 Q.H.

All Quarters

11.211 Electricity and Magnetism I

(Prereq. 11.128 or 11.206 and 11.208 or 10.207 or 10.221) 4 Q.H.

The first quarter of a two-quarter sequence in electromagnetic theory. Maxwell's equations and their experimental basis; electrostatics and magnetostatics; the electromagnetic field in empty space; electromagnetic waves.

Fall and Winter Qtrs.

11.212 Electricity and Magnetism II

(Prereq. 11.211) 4 Q.H.

Continuation of 11.211. Energy and momentum in the electromagnetic field. Electrodynamics: the interaction of matter and the field. Radiation.

Spring Qtr.

11.220 Thermodynamics and Kinetic Theory

(Prereq. 11.128 or 11.206 and 10.205 or 10.145) 4 Q.H.

First and second laws of thermodynamics. Entropy and equilibrium. Thermodynamic potentials. Elementary kinetic theory. Statistical mechanics and the statistical interpretation of entropy.

Fall and Summer Qtrs.

11.221 Wave Motion and Optics

(Prereq. 11.119) 4 Q.H.

Harmonic and coupled oscillators, wave equation. Geometrical and physical optics: interference, diffraction, optics of solids, amplification of light: lasers.

Winter Qtr.

11.230 Modern Physics (Prereq. 11.128 or 11.207 and 10.205 or 10.145) 4 Q.H.
A review of experiments demonstrating the atomic nature of matter, the properties of the electron, the nuclear atom, the wave-particle duality, spin, and the properties of elementary particles. The course discusses, mostly on a phenomenological level, such subjects as atomic and nuclear structure, properties of the solid state, and elementary particles.

Fall and Winter Qtrs.

11.240 Quantum Mechanics I (Prereq. 11.230, 10.207) 4 Q.H.
The first of a two-quarter sequence in quantum mechanics. Observations of macroscopic and microscopic bodies. The uncertainty principle, wave particle duality, probability amplitudes, Schrodinger wave theory, and one-dimensional problems.

Fall and Winter Qtrs.

11.241 Quantum Mechanics II (Prereq. 11.240) 4 Q.H.
Continuation of 11.240. Discrete and continuous states, Schrodinger equation in three dimensions, angular momentum, general theory of quantum mechanics, applications.

Spring Qtr.

11.260 Wave Laboratory (Prereq. 11.128 or 11.206) 4 Q.H.*
A general treatment of the problems of mechanical and electromagnetic radiation as wave phenomena. The differential wave equation and its application to selected topics. Interference and diffraction theory from the standpoint of the Huygens-Fresnel and Kirchoff formulations. Selected experiments in acoustics, optics, and microwaves to illustrate these problems.

Fall and Winter Qtrs.

11.270 Intermediate Laboratory (Prereq. 11.128 or 11.206) 3 Q.H.*
Same as 11.260.

Fall and Winter Qtrs.

11.271 Electronics Laboratory (Prereq. 11.128 or 11.206) 3 Q.H.*
Electronic circuits, pulse techniques, logic circuits, the photomultiplier, atomic detectors.

Fall and Spring Qtrs.

11.272 Experimental Laboratory (Prereq. 11.271) 3 Q.H.*
Experiments investigating the atomic nature of matter, the properties of the electron, and special relativity. The work involves vacuum system techniques and machine-shop practice.

Winter Qtr.

11.273 Advanced Physics Laboratory (Prereq. 11.272) 3 Q.H.*
Special projects in modern experimental physics.

Spring Qtr.

11.281 Properties of Matter (Prereq. 10.205, 11.128, or 11.206) 4 Q.H.
The quantitative description of solids, liquids, and gases. Topics include: the kinetic theory of gases (distribution functions, collisions, viscosity, thermal conductivity, diffusion), gas imperfection, real gases, the transition to the liquid phase, amorphous and crystalline solid structure, alloys and the metallurgical phase diagram, imperfections in solids.

Summer Qtr.

11.282 Introduction to Solid State Physics (Prereq. 11.281 or 11.220) 4 Q.H.
A semi-classical treatment of the thermal, magnetic, and electrical properties of crystalline solids. Topics include: X-ray diffraction and the reciprocal lattice, elasticity and lattice vibrations, the specific heat, properties of insulators, magnetism in insulators and in metals, introduction to the band theory of metals.

Summer Qtr.

11.295, 11.296, 11.297, 11.298 Honors Program All Quarters

*Including lab.

11.317 Physics I (Mechanics)

(Prereq. 10.307 or concurrently) 4 Q.H.

Kinematics and dynamics of particle motion, Newton's laws, projectile and circular motion, conservation laws for momentum and energy, rotational motion, simple harmonic motion.

Fall and Winter Qtrs.

11.318 Physics II (Wave, Motion, Sound, Heat)

(Prereq. 11.317) 4 Q.H.

Wave motion, intensity, interference phenomena, Doppler effect, vibrating systems, temperature, heat, change of state, heat transfer, kinetic theory of gases, general gas laws, thermodynamics.

Winter and Spring Qtrs.

11.319 Physics III (Electricity, Magnetism, Light)

(Prereq. 11.318) 4 Q.H.

Electrostatics, magnetism, magnetic induction, induced currents, direct and alternating current circuits, properties of light, reflection, refraction, dispersion, optical systems, diffraction, polarization.

Spring Qtr.

11.373 Physics Laboratory I

2 Q.H.*

Experiments from various physics topics that have been covered in 11.317 and concurrently in 11.318.

11.374 Physics Laboratory II

2 Q.H.*

A continuation of 11.373, with experiments from topics in 11.318 and 11.319.

11.420 Physics IV (Electromagnetic Field)

4 Q.H.

Static electric and magnetic fields. Experimental basis for Maxwell's equations. Electromagnetic waves.

Fall and Winter Qtrs.

Chemistry

12.101 General Chemistry

3 Q.H.*

Introduction to the principles of chemistry, with emphasis on stoichiometry, ionic solutions, and the inorganic chemistry of biological systems.

Prof. Boig

Fall Qtr.

12.102 General Chemistry

(Prereq. 12.101) 3 Q.H.*

Introduction to organic chemistry, with emphasis on compounds of biological significance.

Prof. Boig

Winter Qtr.

12.103 General Chemistry

5 Q.H.*

For Chemistry majors and selected students in other majors, such as Biology, Physics, etc. Stoichiometry, atomic structure, chemical bonding, acids and bases, oxidation-reduction, states of matter, solutions. Laboratory: introduction to qualitative analysis.

Prof. Roebber

Fall Qtr.

12.104 General Chemistry

(Prereq. 12.103) 5 Q.H.

For Chemistry majors and selected students in other majors, such as Biology, Physics, etc. Electronic structure and chemical properties, covalent bonding, coordination compounds, topics in organic chemistry, chemical equilibria, introduction to chemical thermodynamics and kinetics. Laboratory: qualitative analysis.

Prof. Roebber

Winter Qtr.

12.105 Analytical Chemistry

(Prereq. 12.104) 5 Q.H.*

Theory, apparatus, operations, and interpretation of observations for a broad spectrum of present-day methods of chemical analysis, including electrical, optical, gravimetric, and titrimetric techniques.

Prof. Jankowski

Spring Qtr.

*Including lab.

12.106 General Chemistry

5 Q.H.*

For non-Chemistry majors. Basic concepts and definitions, the mole concept and chemical stoichiometry, states of matter, solutions, periodicity of elements, atomic structure, chemical bonding and reactions.

Profs. Cass and Davies

Fall and Winter Qtrs.

12.107 General Chemistry

(Prereq. 12.106) 5 Q.H.*

For non-Chemistry majors. Chemical kinetics and equilibria, acids and bases, elementary thermodynamics, electrolysis and electrochemistry, chemistry of representative elements, nuclear chemistry, introduction to organic chemistry.

Profs. Boig and Cass

Winter, Spring, and Summer Qtrs.

12.108 Fundamentals of Chemical Sciences I

4 Q.H.

Development and discussion of important principles and concepts of the chemical sciences. Intended for students in the social sciences and humanities with minimal background in science and mathematics. The objective of 12.108-.109 is to give the non-science student an appreciation and some knowledge of the role of chemistry in our technological society and in our everyday lives.

Prof. Davies

Fall and Winter Qtrs.

12.109 Fundamentals of Chemical Sciences II

(Prereq. 12.108) 4 Q.H.

Continuation of 12.108. Discussion of the chemistry involved in such basic human needs as food, clothing, shelter, transportation, and energy production. Other topics (e.g., environmental problems) may be included or substituted, since students will participate in selection of topics for discussion.

Prof. Cass

Spring Qtr.

12.114 General Chemistry

4 Q.H.

Primarily for engineering students. Introduction to the principles of chemistry, focusing upon the states and structure of matter and chemical stoichiometry.

Prof. Reiff

Fall and Winter Qtrs.

12.115 General Chemistry

(Prereq. 12.114) 4 Q.H.

Primarily for engineering students. Introduction to the principles of chemistry, focusing upon chemical equilibria and the nature of some common materials.

Prof. Reiff

Winter, Spring, and Summer Qtrs.

12.118 General Chemistry Laboratory

1 Q.H.

Optional laboratory for 12.115 (General Chemistry for engineering students). Experiments pertaining to lecture material.

Prof. Reiff

Winter and Spring Qtrs.

12.139 General Chemistry

4 Q.H.

For students in the College of Criminal Justice. Structure of matter; physical and chemical properties of metallic and nonmetallic elements, inorganic compounds, and alloys; stoichiometry; solids, liquids, and solutions. Laboratory experiments illustrate basic chemical principles and representative chemical reactions.

Profs. Jankowski and Howell

Fall and Winter Qtrs.

12.140 General Chemistry

(Prereq. 12.139) 4 Q.H.

For students in the College of Criminal Justice. Continuation of 12.139, with emphasis on application of principles. Chemical reactivity, acids and bases, oxidation-reduction, physical and chemical properties of organic compounds. Laboratory continues studies of the first quarter.

Profs. Howell and Jankowski

Spring and Summer Qtrs.

12.144 Organic Chemistry

(Prereq. 12.104 or 12.107) 5 Q.H.*

Nomenclature, preparation, properties, and reactions of common organic compounds.

Prof. Jones

Fall and Winter Qtrs.

*Including lab.

12.145 Organic Chemistry

(Prereq. 12.144) 5 Q.H.*

Continuation of 12.144.

Prof. Jones

Spring and Summer Qtrs.

12.147 Organic Chemistry

(Prereq. 12.115) 4 Q.H.*

Aliphatic compounds; preparation, properties, and reactions of the more common classes of open-chain compounds; electronic interpretation of structures and reactions; petrochemicals; synthetic resins; carbohydrates; fats; proteins.

Prof. Howell

Fall and Winter Qtrs.

12.148 Organic Chemistry

(Prereq. 12.147) 4 Q.H.*

Aromatic compounds; preparation, properties, and reactions of the more common classes of aromatic compounds; electronic interpretation of structures and reactions of aromatic compounds; dyes, commercial solvents, and important industrial products. A brief introduction to alicyclic and heterocyclic compounds.

Prof. Howell

Spring and Summer Qtrs.

12.153 Organic Chemistry

(Prereq. 12.105) 3 Q.H.

Syntheses and properties of aliphatic and aromatic hydrocarbons and their functional derivatives; correlation between the structure of organic compounds and their physical and chemical properties; electronic interpretation of organic reactions.

Prof. Viola

Fall and Winter Qtrs.

12.154 Organic Chemistry

(Prereq. 12.153) 5 Q.H.*

Continuation of 12.153.

Prof. Viola

Spring and Summer Qtrs.

12.155 Organic Chemistry

(Prereq. 12.154) 5 Q.H.*

Continuation of 12.154

Prof. Howell

Fall and Winter Qtrs.

12.161 Physical Chemistry

(Prereq. 10.152 and 11.118 or equivalent) 4 Q.H.*

Chemical thermodynamics.

Prof. Wiener

Fall and Winter Qtrs.

12.162 Physical Chemistry

(Prereq. 12.161) 4 Q.H.*

Phase equilibria, solutions, kinetic theory of gases, chemical kinetics.

Prof. Wiener

Spring and Summer Qtrs.

12.166 Physical Chemistry

(Prereq. 10.183 and 11.118 or equiv.) 3 Q.H.

Similar to 12.161, but without laboratory.

Prof. Wiener

Fall and Winter Qtrs.

12.169 Physical Chemistry

(Prereq. 12.161 or 12.166) 3 Q.H.

Similar to 12.162, but without laboratory.

Prof. Wiener

Spring and Summer Qtrs.

12.170 Physical Chemistry

(Prereq. 12.162 or 12.169) 3 Q.H.

Quantum chemistry, particles and waves, Schrodinger wave mechanics, the chemical bond.

Prof. Giessen

Fall and Winter Qtrs.

12.171 Analytical Chemistry

(Prereq. 12.107 or equiv.) 4 Q.H.*

Theories, principles, and application of volumetric, gravimetric, and instrumental methods of analysis.

Prof. Spinos

Winter and Spring Qtrs.

12.180 Ocean Chemistry

(Prereq. 12.105, 12.171, or equiv.) 4 Q.H.*

Principles and practices of chemical and instrumental methods in current use in marine investigations, with emphasis on procedures, apparatus, and interpretation of experimental observations. Laboratory exercises include: chlorinity and salinity measurements, biological

*Including lab.

oxygen demand, trace nutrient measurement, carbonate alkalinity, heavy metal pollutants, and selected projects.

Prof. Jankowski

Spring Qtr.

12.181 Instrumental Analysis

(Prereq. 12.105 or 12.171) 3 Q.H.

Theory, procedures, operations, and apparatus used in instrumental analysis, with emphasis on interpretation of results from typical scientific investigations. Current practices in the following methods are included: atomic absorption, ultraviolet and infrared absorption, voltammetry, anodic stripping, coulometry, gas chromatography, high-speed liquid chromatography, radiotracer techniques, and neutron activation analysis.

Prof. Jankowski

Fall and Winter Qtrs.

12.185 Inorganic Chemistry

(Prereq. 12.105) 2 Q.H.

Atomic properties of free atoms and ions. Ionic bonding and the structure of the solid state. The Madelung calculation; the Born-Haber and other thermodynamic cycles. Valence-bond and molecular orbital theories of bonding. Stereochemistry of compounds of representative elements. Electron-deficient compounds.

Prof. Davies

Spring and Summer Qtrs.

12.189 Biochemistry Laboratory II

(Prereq. 93.151 or equiv.) 2 Q.H.*

Special projects in biochemical experimentation.

Staff

Spring and Summer Qtrs.

12.200 Principles of Experimental Chemistry

(Prereq. 12.166) 2 Q.H.

Instrumentation, measurements, and evaluation. Basic electronics and optics, statistical methods, computer techniques.

Prof. Keller

Spring and Summer Qtrs.

12.201 Integrated Chemistry Laboratory I

(Prereq. 12.166) 2 Q.H.*

Procedures and techniques, experiments in basic electronics and optics, vacuum system design, and data processing.

Prof. Keller

Spring and Summer Qtrs.

12.202 Integrated Chemistry Laboratory II

(Prereq. 12.201) 3 Q.H.*

Integrated experiments in inorganic, analytical, and physical chemistry; compound preparation, characterization, and property studies.

Prof. Keller

Fall and Winter Qtrs.

12.213 Advanced Inorganic Chemistry

(Prereq. 12.170) 4 Q.H.

Periodic properties of representative elements and their compounds. General theories of acid and base behavior. Spectral and magnetic properties of transition metal compounds. Crystal field and molecular orbital theories of bonding. Kinetics and thermodynamics of reactions of transition metal compounds.

Prof. Davies

Spring and Summer Qtrs.

12.252 Advanced Organic Chemistry I

(Prereq. 12.155 or 12.145) 3 Q.H.

Organic structure and reactions. Corresponds to graduate course 12.861.

Staff

Fall Qtr.

12.253 Identification of Organic Compounds

(Prereq. 12.155) 3 Q.H.*

Qualitative analysis of organic compounds and mixtures, using physical, chemical, and instrumental methods.

Prof. Howell

Spring and Summer Qtrs.

12.254 Advanced Organic Chemistry II

(Prereq. 12.155 or 12.145) 3 Q.H.

Organic structure and reactions. Corresponds to graduate course 12.862.

Staff

Winter Qtr.

12.255 Advanced Organic Chemistry III

(Prereq. 12.252 or 12.254) 3 Q.H.

Organic structure and properties. Corresponds to graduate course 12.863.

Staff

Spring Qtr.

*Including lab.

- 12.257 Advanced Analytical Chemistry I** (Prereq. 12.181) 3 Q.H.
Analytical separations. Corresponds to graduate course 12.821.
Prof. Karger Fall Qtr.
- 12.258 Advanced Analytical Chemistry II** (Prereq. 12.181) 3 Q.H.
Electronanalytical. Corresponds to graduate course 12.822.
Prof. Keller Winter Qtr.
- 12.259 Advanced Analytical Chemistry III** (Prereq. 12.181) 3 Q.H.
Optical methods of analysis. Corresponds to graduate course 12.823.
Prof. Jankowski Spring Qtr.
- 12.262 Advanced Physical Chemistry I** (Prereq. 12.170) 3 Q.H.
Chemical thermodynamics. Corresponds to graduate course 12.881.
Prof. Roebber Fall Qtr.
- 12.263 Advanced Physical Chemistry II** (Prereq. 12.170) 3 Q.H.
Atomic and molecular structure. Corresponds to graduate course 12.885.
Staff Winter Qtr.
- 12.264 Advanced Physical Chemistry III** (Prereq. 12.170) 3 Q.H.
Chemical kinetics. Corresponds to graduate course 12.893.
Prof. Roebber Spring Qtr.
- 12.271, 12.272, 12.273,** (each) 3 Q.H.
12.274, 12.275, 12.276 Undergraduate Research (each) 4 Q.H.
Original experimental work under the direction of a staff member. Participation may begin in the middler year and will normally continue through the senior year. Approval of the administrating committee is required.
Staff All Quarters
- 12.284 Advanced Chemical Synthesis** (Prereq. 12.155) 3 Q.H.*
Special projects in the synthesis of organic and/or inorganic compounds, using advanced techniques.
Prof. Howell Fall and Winter Qtrs.
- 12.286 Advanced Chemical Measurements** (Prereq. 12.163 and 12.179) 3 Q.H.*
Laboratory problems in analytical and/or physical chemistry.
Prof. Keller Fall and Winter Qtrs.
- 12.288 Special Topics** (Prereq. 12.163) 4 Q.H.
Staff Spring Qtr.
- 12.291, 12.292, 12.293, 12.294 Honors Program** (each) 4 Q.H.
All Quarters

Earth Sciences

- 16.104 Introduction to Earth Science** 4 Q.H.
Considers both the lithosphere and hydrosphere of the earth. The forces and factors producing changes in these environments are examined in some detail and are applied to an understanding of the earth's historical development.
Staff Fall and Winter Qtrs.
- 16.105 Introduction to Earth Science** (Prereq. 16.104) 4 Q.H.
A continuation of 16.104. Consideration of the gaseous envelope surrounding the earth and the meteorological phenomena occurring within it is followed by a study of the earth as an astronomical body. Particular emphasis is placed on the behavior of the earth as a member of

*Including lab.

the solar system.

Staff

Winter and Spring Qtrs.

16.121 Natural History I

4 Q.H.*

A framework is developed for investigating the factors of the natural world. Concepts of ecology are employed to examine the niche, habitat, biome, and realm. Content centers about the current season and the season to follow. Laboratory is structured to develop comprehension of and facility with the course materials and their adaptation to the educational process.

Prof. Wilmarth

Fall and Winter Qtrs.

16.122 Natural History II

(Prereq. 16.121) 4 Q.H.*

A continuation of Natural History I. Content is concerned with the remainder of the calendar year. Greater emphasis is placed upon dealing with the natural world by direct confrontation through field trips. Field exercises and personal research.

Prof. Wilmarth

Spring and Summer Qtrs.

16.125 Environmental Conservation

4 Q.H.

Problems relating to the use and preservation of the earth's environment. Both renewable and non-renewable resources will be considered, with special emphasis given to urban environmental problems.

Profs. Overcash and Ruggles

All Quarters

16.131 Oceanography I

4 Q.H.*

The geology of the ocean basins; the physical and chemical properties of sea water; the development of ocean currents and their important effects on the land masses of the world.

Prof. Gordon

Fall, Winter, and Spring Qtrs.

16.132 Oceanography II

4 Q.H.*

The productivity of animal and plant life in the various zones of the ocean; the growing economic importance of the oceans as a source of food for the expanding world population.

Prof. Gordon

Fall, Winter, and Spring Qtrs.

16.133 Geology of Eastern United States

4 Q.H.

The systematic study of the geomorphic provinces in the Appalachian and interior regions of the United States. Emphasis on the structure, types of landforms, and geologic history of each province.

Prof. Ruggles

Fall and Winter Qtrs.

16.134 Geology of Western United States

4 Q.H.

The systematic study of the geomorphic provinces in the Rocky Mountains and Pacific Coast Ranges of the United States. Emphasis on the structure, types of landforms, and geologic history of each province.

Prof. Ruggles

Spring and Summer Qtrs.

16.161 Observational Astronomy

4 Q.H.

An introduction to the night sky as seen by the naked eye and with simple optical aids. The location and identification of constellations, major stars, planets, comets, and meteors. Three telescopic viewing sessions are held.

Prof. Overcash

Winter and Spring Qtrs.

16.180 Physical Geography I

4 Q.H.

Constructed to promote an understanding of man's physical environment, with concentration of study upon weather, climate, and vegetation on a world-wide scale.

Prof. Allen and Mr. Casarjian

Fall and Winter Qtrs.

16.182 Physical Geography II

(Prereq. 16.180) 4 Q.H.

An interpretative description and analysis of landforms and soils. Emphasis on an examination of landform development and distribution.

Prof. Allen and Mr. Casarjian

Winter and Spring Qtrs.

*Including lab.

16.183 Regional Geography of Africa

4 Q.H.

Regional analysis of historical, economic, political, cultural, and physical aspects of geography. A comparative case study approach is utilized in order to accent regional differences.

Mr. Casarjian

Fall Qtr.

16.184 Regional Geography of Latin America

4 Q.H.

Regional analysis of historical, economic, political, cultural, and physical aspects of geography. Population geography is also examined. Problems in tropical development are studied by means of a comparative case study approach.

Mr. Casarjian

Winter Qtr.

16.186 Applied Climatology

(Prereq. 16.180) 4 Q.H.

The individual elements of climate are synthesized into climatic types and regions. Climatic classifications are employed as vehicles for describing the distribution of climates. Microclimatology and applied climatology and human dimensions of weather modification are introduced.

Mr. Casarjian

Spring Qtr.

16.187 Urban Geography

4 Q.H.

Geographic structures and functions of individual cities are elaborated and the factors which determine those structures studied. Theory of city systems is developed in detail and the modern megalopolitan forms explained. Processes and problems of city growth are investigated and an attempt made to consolidate the variety of explanations for them.

Prof. Allen

Winter Qtr.

16.201 Physical Geology

4 Q.H.

A systematic study of the materials comprising the earth. Topics emphasized include the processes by which rock is formed, transported, altered, and destroyed, as well as the nature and development of landscape.

Staff

Fall and Winter Qtrs.

16.202 Historical Geology

(Prereq. 16.201) 4 Q.H.*

The physical and biological history of the earth is traced through geologic time. Major topics are the origin and evolution of life, mountain building, and continental drift.

Prof. Bailey

Winter and Spring Qtrs.

16.203 Physical Geology Laboratory

(Prereq. 16.201 or concurrently) 1 Q.H.*

Optional laboratory for Physical Geology 16.201. Laboratory exercises pertain to mineral and rock identification and topographic and geologic map interpretation. Required for Geology majors.

Staff

Fall and Winter Qtrs.

16.204 Historical Geology Laboratory

(Prereq. 16.202 or concurrently) 1 Q.H.*

Introduction to fossil representatives of major invertebrate phyla; application of fossils to studies of rock sequences; and interpretation of geologic history from geologic maps.

Prof. Bailey

Winter and Spring Qtrs.

16.211 Descriptive Mineralogy

(Prereq. 1yr. chemistry) 4 Q.H.*

An introduction to the study of mineralogy, including crystallography, and physical, chemical, and descriptive mineralogy of the common rock-forming minerals.

Prof. Westerman

Fall and Winter Qtrs.

16.212 Optical Crystallography

(Prereq. 16.211) 4 Q.H.*

Both the theory and the practical methods of optical crystallography are studied, including the basic techniques for determining the optical constants of crystals using the polarizing microscope and immersion media.

Prof. Westerman

Spring and Summer Qtrs.

*Including lab.

16.213 Optical Mineralogy (Prereq. 16.212) 4 Q.H.*
The identification of the common rock-forming minerals using the petrographic microscope and rock-thin sections, including an introduction to mineral phase relationships.
Prof. Westerman Fall and Winter Qtrs. beginning September 1974

16.216 Igneous and Metamorphic Petrology (Prereq. 16.213) 4 Q.H.*
The evolution of crystalline rocks and their distribution in time and space, including the physical and chemical factors in igneous and metamorphic processes.
Prof. Westerman Spring Qtr.

16.221 Stratigraphy and Sedimentation (Prereq. 16.202) 4 Q.H.*
The lithologic properties and stratigraphic relationships of sedimentary rock. Sedimentary processes, facies, and provinces of deposition are considered in conjunction with the collecting and evaluating of stratigraphic data. Classic stratigraphic sequences are reviewed, with emphasis on the general stratigraphic principles which they illustrate.
Prof. Bailey Spring Qtr.

16.222 Sedimentary Petrology (Prereq. 16.212) 4 Q.H.*
The origin, classification, petrography, and environment of deposition of all important types of sedimentary rocks. Laboratory work is concerned with the study and interpretation of sedimentary rocks in thin section.
Prof. Bailey Fall Qtr.

16.231 Glacial and Pleistocene Geology (Prereq. 16.202) 4 Q.H.*
The processes of ice movement and the characteristics and distribution of erosional and depositional structures which are associated with past and present glaciers. Introduction to Pleistocene chronology and correlations.
Prof. Newman Spring Qtr.

16.232 Geomorphology (Prereq. 16.201) 4 Q.H.*
The origin and evolution of landscape features by processes operating at or near the earth's surface.
Prof. Allen Fall Qtr.

16.233 Coastal Processes (Prereq. 16.201) 4 Q.H.*
The effect of nearshore marine processes and the resultant coastal responses. The dynamics of waves and currents and the associated erosion, transportation, and deposition of sediment forming beaches, barrier islands, and cliffed structures.
Prof. Allen Spring Qtr., odd-numbered yrs.

16.234 Fluvial Processes (Prereq. 16.201) 4 Q.H.*
A study of streams: their hydraulics, erosion, transportation, and deposition of sediment, channel shape and pattern, and drainage basin analysis.
Prof. Allen Spring Qtr., even-numbered yrs.

16.241 Structural Geology (Prereq. 16.201) 4 Q.H.*
The fundamentals of rock structure and the mechanics of rock deformation. Folds, faults, joints, and cleavage, and their importance in geological interpretation. Analysis of structures in the field. Laboratory work consists of three-dimensional problems involving structural concepts.
To be announced Winter Qtr.

16.246 Field Geology (Prereq. 16.201) 4 Q.H.*
An introduction to field techniques as a working guide for the approach, pursuit, and solution of geologic problems. Among the techniques considered are geologic map construction, stratigraphic section measurement, and field rock description. The laboratory consists of field research at a quarry, roadcut, or other geologic exposure.
Prof. Bailey and Newman Summer Qtr.

*Including lab.

16.251 Paleontology

(Prereq. 16.202) 4 Q.H.*

Survey of important invertebrate phyla preserved in the geologic record. Correlation, evolution, paleoecology, and other biologic concepts are applied to fossil organisms.

Prof. Bailey

Winter Qtr.

16.261 Advanced General Geology

(Prereq. 16.201, 16.202) 4 Q.H.

An introduction to new and advanced concepts, theories, and hypotheses in geology. Students participate actively in discussions, research papers, and individual projects. Topics may include: continental drift, sea floor spreading, uniformitarianism, peneplanation, evolution, origin of magma, and origin and geologic history of the moon.

Profs. Bailey and Newman

Summer Qtr.

16.271 Geology Seminary

(Prereq. major in Geology or senior status) 4 Q.H.

An in-depth study, on an individual or small-group basis, of a selected geologic topic. Both oral and written presentations are required.

Staff

Spring Qtr.

16.281, 16.282, 16.283, 16.284 Field Trip

(Prereq. 16.141) 1 Q.H. each

A three- to six-day field trip in eastern North America, providing exposure to various rock types, geologic structures, and fossil collecting. Field notes and summary report required of all participants; additional fee of \$25 to \$50 charged.

Staff

Fall and Spring Qtrs.

16.287, 16.288 Undergraduate Research

4 Q.H. each

Independent research on a selected topic under the direct supervision of a faculty member. Open only to juniors and seniors majoring in Geology, with the recommendation of the supervising faculty member and the department.

Staff

All Quarters

16.290, 16.291 Directed Study

4 Q.H. each

Independent study of a specific topic not normally contained in the regular course offerings, but within the area of competence of a faculty member. Open to all students with the recommendation of a faculty member and departmental approval.

Staff

All Quarters

16.295, 16.296, 16.297, 16.298 Honors Program

4 Q.H. each

Staff

All Quarters

Biology

18.114 Functional Human Anatomy I

5 Q.H.*

Introduction to cellular and tissue structure and function, followed by anatomical terminology. Histology, anatomy, and physiology of bones, muscles, blood. Hemodynamics and principles of circulation. The laboratory includes a study of human bones, cat dissection, and related histology.

Fall and Winter Qtrs.

18.115 Functional Human Anatomy II

(Prereq. 18.114) 5 Q.H.*

Anatomy and physiology of the respiratory, digestive, urogenital, and nervous systems. Physiology of endocrine system and a brief anatomy and physiology of eye and ear. The laboratory includes studies of muscle and nerve physiology, blood physiology and histology, and physiology of respiration.

Winter, Spring, and Summer Qtrs.

18.117 Human Biology

4 Q.H.*

General biological principles applied to and illustrated by the human species; human cellular structure and basic metabolic processes; human genetics, human reproduction, human

*Including lab.

evolution, human ecology and interactions with other species of plants and animals.

Winter Qtr.

18.118 Organic Evolution

4 Q.H.

The major features of organic evolution, with emphasis on vertebrate evolution, genetics, and physical influences.

Prof. Moyer

Spring and Summer Qtrs.

18.119 Environment and Man

4 Q.H.

An ecological analysis of the human situation and of man's interaction with other organisms.

The necessary foundation of biological principles will be presented.

Staff

Fall and Winter Qtrs.

18.120 Basic Microbiology

4 Q.H.*

Microbial life, emphasizing morphological characteristics, physiological activities, and disease production.

Staff

Fall, Winter, and Spring Qtrs.

18.123 Biology of Human Reproduction

(no prereq.) 4 Q.H.

Structure and function of male and female reproductive systems; factors affecting sexual development, fertility, and reproductive behavior in the human species. Physiology of coitus, fertilization, pregnancy, birth, and lactation. Methods of controlling fertility; some consideration of eugenics and the world population problem.

Winter Qtr.

18.124 Introductory Seminar in Biology

1 Q.H.

Seminar for students who plan to major in Biology. To be taken concurrently with 18.131, General Biology. Classic and modern original research papers are studied for insight into the rationale, methodology, and conclusions of biological research.

Fall and Winter Qtrs.

18.125 Human Physiology

(Prereq. 18.141, 18.142 or equiv.) 3 Q.H.*

Physical and biochemical activities of blood corpuscles, nerve and muscle fibers; functions of the nervous system, heart, and endocrines.

Fall and Winter Qtrs.

18.126 Human Physiology

(Prereq. 18.125) 3 Q.H.*

Respiration and circulation; functions of the blood, lymph, kidneys; nutrition and digestion; sensory physiology and physiologic aspects of reproduction.

Spring and Summer Qtrs.

18.131 General Biology

4 Q.H.*

Universal properties and processes of living organisms. Cellular composition and cellular activities, inheritance and cellular control, the evolutionary process environmental relationships.

Staff

Fall and Winter Qtrs.

18.132 Animal Biology

(Prereq. 18.131) 4 Q.H.*

Systematic comparative study of the structure and functions of animals. Diversity of animals considered from the standpoint of evolutionary adaptation.

Staff

Winter, Spring, and Summer Qtrs.

18.133 Plant Biology

(Prereq. 18.131-18.133) 4 Q.H.*

Systematic study of the structure and function of plants, principally vascular. Survey of the plantlike protists and monorans.

Staff

Fall and Winter Qtrs.

18.134 Environmental and Population Biology

(Prereq. 18.131-18.133) 4 Q.H.*

Detailed consideration of the physico-chemical factors influencing and influenced by organisms. Interactions among individual organisms and among species. Change of species

*Including lab.

by genetic natural selection.

Prof. Ruber

Spring and Summer Qtrs.

18.135 Genetics and Development Biology

(Prereq. 18.131-18.133) 4 Q.H.*

Elaboration of the classic laws of heredity. Cytogenetics. Chemical basis of heredity. Selected examples of the development of form and function.

Profs. Moyer and Dealy

Fall and Winter Qtrs.

18.136 Cell Biology

(Prereq. 18.131-18.133) 4 Q.H.*

Basic chemical and physical processes of cells related to their fine structure; oxidative and intermediary metabolism; photosynthesis; membrane phenomena; movement.

Prof. Goolsby

Spring and Summer Qtrs.

18.141 Basic Animal Biology

4 Q.H.*

Principles of biology. Universal properties and processes of living organisms as exemplified by the cell and its activities. Inheritance, evolution, and environmental relationships.

Staff

Fall and Winter Qtrs.

18.142 Basic Animal Biology

(Prereq. 18.141) 4 Q.H.*

Structure and function of organ systems and animals. Diversity of animals considered from the evolutionary standpoint.

Staff

Winter, Spring, and Summer Qtrs.

18.145 Human Anatomy and Physiology I

4 Q.H.*

Lecture—structure of the human organ systems. Physiology of muscle and of the nervous system; control of voluntary movement, autonomic control, sensation. Laboratory—anatomy, based on dissections of a representative mammal and comparison with human models; microscopic anatomy of selected organs.

Winter Qtr.

18.146 Human Physiology II

(Prereq. 18.145) 4 Q.H.*

Lecture—human physiology based on the concept of the homeostatic state; functions of the blood and circulatory system, immunity, digestion, nutrition, respiration, excretion, reproduction, endocrine controls of the preceding processes. Laboratory—experiments demonstrating selected physiological phenomena in humans or in representative animals.

Spring Qtr.

18.148 Human Anatomy

4 Q.H.*

The structure and development of the human body.

Prof. Shukri

All Quarters

18.158 Vertebrate Physiology

(Prereq. 18.131-18.133, 18.136) 4 Q.H.*

Properties of living protoplasm; the general organization and function of cells; translocation of materials and the organization of animals; the physiology of the skeletal systems of man and animals; the physiology of amoeboid, ciliary and contractile movement with emphasis on muscle metabolism; the structure and function of neurons, reflex arcs, the autonomic nervous system, and the sensory receptors.

Prof. Pearincott

Fall and Winter Qtrs.

18.159 Vertebrate Physiology

(Prereq. 18.158) 4 Q.H.*

Fluid media of animals, emphasizing water and electrolyte balance and kidney function in many; the physiology of blood, including its formation, functions, clotting, antigens and tests for identifying blood; the physiology of the heart, nervous control of the vascular system, breathing and gas transport, heat regulation, nutrition, digestion and assimilation; the endocrine secretions, and the physiologic aspects of reproduction.

Prof. Pearincott

Spring and Summer Qtrs.

18.208 Comparative Vertebrate Anatomy

(Prereq. 18.131 and 18.132) 5 Q.H.*

Morphology and phylogeny of the vertebrates; laboratory studies on taxonomy of the group

*Including lab.

and specific morphology of the dogfish shark, the mud puppy, the alligator and the cat.
Prof. Ahlberg Spring and Summer Qtrs.

18.209 Embryology (Prereq. 18.131, 18.132, 18.135) 5 Q.H.*
Gametogenesis, fertilization, cleavage, gastrulation, induction, organogenesis, and metamorphosis in vertebrates. Emphasis on frog, chick, and pig in the laboratory.
Prof. Ahlberg Fall Qtr.

18.210 Invertebrate Zoology (Prereq. 18.131-18.135) 5 Q.H.*
The invertebrate animals exclusive of the protozoans and insects.
Prof. Morse Fall and Winter Qtrs.

18.211 Parasitology (Prereq. 18.131, 18.136) 4 Q.H.*
Symbiotic relationships of protozoans, mesozoans, flatworms, nematodes, acanthocephalans, and arthropods.
Prof. Morse, Riser, and Meszoely Fall and Winter Qtrs.

18.212 Vertebrate Paleontology
(Prereq. 18.131, 18.132, 18.134, 18.135 or permission of the instructor) 4 Q.H.*
Evolution of the vertebrates, including man, as revealed through the fossil record. Laboratory, museum, and field studies.
Spring Qtr.

18.220 General Microbiology
(Prereq. or Coreq. 18.135, 18.136 or permission of the instructor) 5 Q.H.*
Basic detailed structure and function of microorganisms and their interaction with their environments based on current knowledge and theory.
Staff Fall, Spring, and Winter Qtrs.

18.227 Animal Histology (Prereq. 18.132) 4 Q.H.*
Microscopic study of fundamental types of animal tissues.
Prof. Pearincott Fall Qtr.

18.228 Histological Technique (Prereq. 18.131, 18.136) 3 Q.H.*
General methods of tissue preparation for purposes of microscopic study; preparation of solutions and stains; the microtome and its operation, together with specific directions for fixation, clearing, hardening, embedding, section-cutting, and staining of tissues.
Prof. Riser and Morse Spring Qtr.

18.231 Lower Plants (Prereq. 18.133) 4 Q.H.*
Systematic morphology and life cycles of monera and plantlike protista.
Prof. Barkley Winter Qtr.

18.232 Higher Plants (Prereq. 18.133) 4 Q.H.*
Systematic morphology of the metaphyla.
Prof. Barkley Winter Qtr.

18.233 Systematic Botany (Prereq. 18.133) 4 Q.H.*
Prof. Barkley Spring Qtr.

18.234 Plant Anatomy (Prereq. 18.133) 4 Q.H.*
Comparative developmental anatomy of seed plants.
Prof. Joshi Spring Qtr.

18.235 Economic Botany (Prereq. 18.133) 4 Q.H.*
Structure, distribution, and cultivation of economic plants, food, and medicinal plants, including those producing fibers, sugars, starches, rubber, gums, spices, and beverages.
Prof. Khudairi Winter and Summer Qtrs.

18.236 Horticulture (Prereq. 18.133 or equiv.) 4 Q.H.*
Basic cultivation methods for ornamental and food plants. Offered evenings at the University

Greenhouse.
Prof. Khudairi

Spring Qtr.

18.237 Introduction to Plant Physiology

(Prereq. 18.133) 5 Q.H.*

Physiological processes in plants at the cellular and organ levels including water relations, mineral nutrition, photosynthesis, respiration, protein and fat synthesis, growth, plant hormones, and development.

Prof. Khudairi

Fall Qtr.

18.239 Terrestrial Ecosystems of North America

(Prereq. 18.133 or permission of instructor) 4 Q.H.*

The major ecosystems of North America are examined with emphasis on species diversity, productivity, origin, history and geographical location. Primary emphasis is placed upon vegetation. Field trips are required, and will be arranged with students after the first class meeting.

Spring Qtr.

18.240 Microbial Physiology

(Prereq. 18.220 or equiv.) 4 Q.H.*

The biochemical changes brought about through microbial activities; measurement of metabolic biosynthesis and degradation, rates of reaction and determination of end products.

Prof. Rosenberg

Fall and Winter Qtrs.

18.242 Medical Microbiology

(Prereq. 18.220 or equiv.) 4 Q.H.*

The bacterial cell as a pathogen, stressing major genera of disease-producing organisms and factors influencing virulence.

Prof. Gabliks

Winter and Spring Qtrs.

18.245 Serology—Immunology

(Prereq. 18.220 or equiv.) 3 Q.H.

Current concepts concerning specific and nonspecific factors of resistance to microbial disease. Chemical and biological considerations of antigens and antibodies.

Prof. Gainor

Winter Qtr.

18.246 Serology—Immunology Laboratory

(Prereq. or Coreq. 18.245) 2Q.H.*

Laboratory studies of procedures employed in biological research. Antibodies will be produced and qualitative and quantitative approaches to agglutination, precipitin, agar diffusion and other tests will be studied.

Prof. Gainor

Winter Qtr.

18.251 Comparative Animal Physiology

(Prereq. 18.132, 18.136 or equivs.) 4 Q.H.*

Study of animal functions, their control, and their adaptiveness to various environments. Consideration of phylogeny of these adaptations and of their underlying cellular mechanisms. Emphasis on invertebrates and lower vertebrates, with comparisons to mammals.

Prof. Wernitz

Winter Qtr.

18.280 Senior Seminar

(Prereq. completion of core biology program, 18.131—18.136) 1 Q.H.

Recent developments in various topics of zoology, microbiology, physiology, botany, ecology, genetics, and cell biology. Student presentation and analysis is emphasized. Limited to qualified juniors and seniors in the B.A. program and required of seniors in the B.S. program.

Fall, Winter, and Spring Qtrs.

18.290, 18.291 Directed Study

(Prereq. completion of core biology program, 18.131-18.136) (each) 2 Q.H.

Independent work on a chosen topic under the direction of members of the Department. Limited to qualified juniors and seniors with approval of the Department and special arrangements with the supervising faculty member. The two quarters of this course together are counted as 1 elective course in the Biology Department.

Staff

All Quarters

*Including lab.

18.295, 18.296, 18.297, 18.298 Honors Program

(each) 4 Q.H.
All Quarters

Psychology

The rapid expansion in the number of psychology course offerings, planned to meet the needs and interests of an increased student group, results in the listing of new courses in this catalog (denoted **N**) which will be given for the first time during the 1973-75 academic years. For specific scheduling information, students should request a current course listing at the Psychology Department Main Office, 440 UR.

Students should note that course numbers below are sometimes presented out of numerical sequence, to reflect subject areas and levels of study most clearly.

INTRODUCTORY COURSES (Liberal Arts curriculum)

19.105 Foundations of Psychology I 4 Q.H.

The basic principles of psychological analysis are taught by a personalized interactive method, using videotapes, progress quizzes, one-to-one study tutorials, and optional small-group discussions. The student can study at his/her own pace, within flexible calendar limits, and class hours are not preassigned.

All Quarters

19.106 Foundations of Psychology II (Prereq. 19.105) 4 Q.H.

The personalized method of 19.105 is extended, featuring a sequence of graded reading assignments and tutorial sessions, with frequent self-evaluation of study progress. Topics include: the analysis of behavior as applied to education, personality and behavior disorders, brain damage and language, sensory processes, ethology and aggression.

All Quarters

QUANTITATIVE METHODS

19.120 Statistics in Psychology I (Prereq. 19.105) 4 Q.H.

A "self-paced" course in the manner of 19.106, Stat. I features a tutorial system that encourages the most advanced students to join in the teaching process by working as "peer-tutors" with the rest of the class. Students achieve a mastery of basic descriptive statistical measures. A sequence of carefully constructed work-problems is supplemented by progress checks, tutorials, and small-group review sessions.

19.121 Statistics in Psychology II (Prereq. 19.120) 4 Q.H.

Students achieve mastery of the techniques for evaluating statistical data and the conclusions drawn from such data. Course format follows 19.120.

All Quarters

19.125 Quantitative Methods (Prereq. 19.121, math elective) 4 Q.H.

Students achieve proficiency in using quantitative tools to solve problems in different areas of psychology. Topics include: graphical methods and logarithms, calculators and slide rules, flow charting, key punching, computer programming in FORTRAN, FOCAL and PAL languages, and simplified discussions of information theory, Fourier analysis, signal detection theory, matrix notation, and computer simulations of psychological systems.

19.126 Advanced Quantitative Methods Seminar (Prereq. 19.125) 4 Q.H.

This seminar is concerned with the rationale that lies behind psychological measurements, and with the derivation of mathematical models that are used to interpret and validate these measurements. **N**.

LEARNING, BEHAVIOR ANALYSIS, BEHAVIOR MODIFICATION

19.160 Experimental Psychology I (Prereq. 19.106, 19.120) 4 Q.H.

Concentration upon the experimental method in the design, execution, analysis, and

reporting of psychological investigations. Includes laboratory experiments with human and animal subjects.

19.161 Experimental Psychology II

4 Q.H.

Now replaced by 19.165.

19.164 Learning and Motivation

(Prereq. 19.106, 19.120) 4 Q.H.

This course features the application of basic behavioral principles to behavioral development, behavior modification, language development, and programmed learning, and their relations to theoretical considerations in the learning process. **N.**

19.165 Learning Laboratory

(Prereq. 19.160 or 19.164) 4 Q.H.

Through direct experience, students gain proficiency in the laboratory analysis of behavior, and in evaluating common generalizations about human behavior. Students design and perform experiments in animal and human learning, memory, decision processes, concept formation, and other topics of individual interest. **N.**

19.166 Programmed Learning

(Prereq. 19.161 or 19.164) 4 Q.H.

The development of programmed instruction has been one of the products of basic behavioral research. Students learn to evaluate instructional programs in the light of basic behavioral principles, and become acquainted with programming techniques in the normal classroom, special education classroom, in complex academic subject matter, and in individual problem areas. **N.**

19.167 Applied Programmed Instruction

(Prereq. 19.166) 4 Q.H.

Students design, test, and evaluate instructional programs for teaching specific subject matter material, or for application to remedial problems, and to test basic instructional theory. **N.**

19.168 Behavior Changed in Institutions

(Prereq. 19.161 or 19.164) 4 Q.H.

A review of successful projects which have been carried out to provide effective remediation and rehabilitation in institutions for the mentally ill, the mentally retarded, the juvenile delinquent (prisons) and the developing human (schools). **N.**

19.169 Punishment and Anxiety

(Prereq. 19.161 or 19.164) 4 Q.H.

How do coercion and aversive consequences influence the course of individual behavior and social interaction? The experimental evidence is surveyed, including an examination of avoidance behavior, escape behavior, and the development of anxiety, as they occur under conditions of coercion. **N.**

19.170 Abnormalities of Language

(Prereq. 19.161 or 19.164) 4 Q.H.

The behavioral analysis of aphasia, stuttering, and reading problems. **N.**

19.171 Applied Behavior Modification I

(Prereq. 19.165, 19.166) 4 Q.H.

In field settings, students gain experience in applying the basic principles of behavior in situations where behavioral change is a desirable goal: remedying behavioral deficits and problem behavior in the retarded and mentally ill; the development of self-control by normal humans; the design of personalized instruction systems; the use of contingency contracting; and other problems of individual interest. **N.**

19.172 Applied Behavior Modification II

(Prereq. 19.171) 4 Q.H.

Continuation of 19.171. **N.**

SENSORY PSYCHOLOGY AND PERCEPTION

19.150 Perception

(Prereq. 19.106) 4 Q.H.

An introduction to the nature of the perceptual world; the nature of object recognition and identification, spatial organization, contextual effects, learning and perception, and the influence of attitudinal, motivational, and personality factors on perception. This course allows the student to self-pace his/her work, using a system of carefully structured work problems, supplemented by progress checks and tutorials.

19.153 Sensation

(Prereq. 19.150) 4 Q.H.

What and how we see, hear, feel, taste, and smell. Our perceptual world is studied in terms of loudness, brightness, color, flavors, etc., which can be specifically related to the functioning of our sensory nervous systems. **N.**

19.162 Sensation and Perception Laboratory I

(Prereq. 19.150) 4 Q.H.

Students do laboratory experiments on seeing, hearing, touching, and tasting. Studies may include dark adaptation, loudness, binaural interaction, brightness constancy, two-point touch thresholds, information processing and interactions between the senses.

19.173 Sensation and Perception Laboratory II

(Prereq. 19.162) 4 Q.H.

Students do laboratory experiments on visual and auditory perception. Studies may include: taste and smell, size and space perception, visual illusions, auditory localization, pattern recognition, pitch memory and left and right ear differences. **N.**

19.174 Vision Seminar

(Prereq. 19.162) 4 Q.H.

This seminar considers the current status of some of the classical problems of vision. Discussions are concerned with advanced problems of stimulus specification, retinal structure, photochemistry, and psychophysics. **N.**

19.175 Seminar on Auditory Perception

(Prereq. 19.162) 4 Q.H.

Dichotic listening, theories of pitch perception, critical bands, loudness functions, auditory pathology, single-unit measurements in the auditory nervous system, and other topics of interest serve as the basis for student-led discussions. **N.**

19.176 Seminar on the Tactual and Chemical Senses

(Prereq. 19.162) 4 Q.H.

Taste mixtures, olfactory adaptation, physiological basis of taste, tactual "speech", movement on the skin, subjective magnitude functions in taste and smell, and the stimulus for smell are the basis for seminar reports and discussions. **N.**

19.177 Seminar on Proprioception and Kinesthesia

(Prereq. 19.162) 4 Q.H.

Student-led discussions consider the sensory systems which serve the muscles, tendons, and joints, and the mechanisms by which they control integrated motor behavior. **N.**

19.190 Animal Psychophysics Laboratory

(Prereq. 19.162, 19.165) 4 Q.H.

A survey of behavioral techniques for investigating sensory and perceptual processes in lower animals. The use of animal subjects to study vision and hearing can provide new insights into the physiological and behavioral processes that underlie these important human functions. **N.**

19.191 Drugs and Perception Seminar

(Prereq. 19.150, 19.179) 4 Q.H.

Discussion centers on the changes in perceptual behavior which are produced by certain pharmacological agents and substances which act upon the sensory system. A critical examination is made of the experimental methods which are used to evaluate induced perceptual changes and the results which have been obtained. **N.**

19.192 Sensory and Perceptual Abnormalities

(Prereq. 19.150, 19.171) 4 Q.H.

A consideration of some of the peripheral factors which influence perception of the external world. Discussions consider how sensory deficits can influence behavior and some of the means for dealing with sensory and perceptual abnormalities. The application of programmed instruction to the development of sensory tests and remedial procedures for nonverbal people; blind or deaf retarded people, young children who have not yet learned to speak, and aphasic patients; the detection of hysterical sensory loss and malingering. **N.**

PHYSIOLOGICAL PSYCHOLOGY**19.178 Physiological Basis of Psychology I**

(Prereq. 19.106) 4 Q.H.

How nerves function and work together in the nervous system; how our sense organs provide the brain with information about the outside world; how the brain acts to produce externally observable behavior; and how such psychological concepts as perception, learning, motivation, arousal, and emotion may relate to nervous system activity.

19.179 Physiological Basis of Psychology II

(Prereq. 19.178) 4 Q.H.

Continuation of 19.178.

19.180 Seminar in Psychological Psychology

(Prereq. 19.179) 4 Q.H.

For students who desire an intensive discussion and practice of laboratory studies of physiological variables. Topics include: evolution of the nervous system, sensory and motor mechanisms, motivation and emotion, sleep, attention and perception, learning, and memory.

19.181 Practicum in Physiological Psychology

(Prereq. 19.180) 4 Q.H.

Laboratory experiments based on 19.180 discussion topics.

19.182 Arousal and Motivation Seminar

(Prereq. 19.179) 4 Q.H.

This seminar examines the experimental methods used to evaluate the concepts of arousal, activation, task relevancy, and motivation. Discussion deals with the results obtained in studies of sleep and wakefulness, attention, and vigilance, when using the electroencephalogram, electromyogram, galvanic skin reflex, reaction time, and the electrocardiogram as response indicators. **N.**

19.183 Biological Bases of Motivation

(Prereq. 19.179) 4 Q.H.

This course focuses on the mechanisms of eating and drinking behavior, attention, sleep, arousal, and emotional behavior. **N.**

19.184 Biological Bases of Learning and Memory

(Prereq. 19.179) 4 Q.H.

The capacity of organisms to learn and retain is analyzed as a function of the increasing complexity of brain structure and function at different phylogenetic levels. The course is concerned with the neural mechanisms underlying learning and the effects of brain damage on memory. **N.**

19.185 Physiological Basis of Abnormal Behavioral Development in Humans

(Prereq. 19.140, 19.179) 4 Q.H.

Interactions between human behavior and the central nervous system, with special emphasis on the role of abnormalities in illuminating normal processes of remembering and forgetting, speech, language, learning, and motor skills. **N.**

19.186 Comparative Psychology and Ethology

(Prereq. 19.179) 4 Q.H.

This course is concerned with the increasing complexity of behavior as we move from simple organisms to primates. Special attention is focused on experimental approach to instinctive, maternal, emotional, and problem-solving behavior. The constitutional vs. environmental factors in behavior are discussed in terms of phylogenetic development. **N.**

19.187 Sensory Physiology Seminar

(Prereq. 19.153, 19.179) 4 Q.H.

This seminar concentrates on the psychophysiology of various sensory systems. Discussions are concerned with the problem of accounting for sensory phenomena in terms of physiological concepts. Particular attention is given to the senses of vision and hearing. **N.**

19.188 Sensory Physiology Laboratory (Prereq. 19.178, 19.150, biology elective) 4 Q.H.

Experiments are performed to illustrate the physiological techniques used in sensory psychology. Electrical recordings are made of some of the activities that accompany visual, auditory, and cutaneous activity. **N.**

19.189 Behavioral Pharmacology

(Prereq. 19.161, 19.179) 4 Q.H.

The application of quantitative behavior techniques in animals and man, to determine the behavioral effects of pharmacologic agents. A systematic survey of the experimental literature. **N.**

PERSONALITY, COGNITIVE, SOCIAL AND DEVELOPMENTAL ASPECTS**19.130 Social Psychology**

(Prereq. 19.106) 4 Q.H.

Among the topics included are a survey of current social theories and models in terms of their relevance to Black culture and experience, historical development of social psychology,

group membership and structure, leadership, and social movements.

19.135 Personality I (Prereq. 19.106) 4 Q.H.

A systematic study of the normal personality, its growth and development. Topics include: environmental and constitutional contributions, assessment of personality, research, and a survey of the major theories of personality.

19.136 Personality II (Prereq. 19.135) 4 Q.H.

Continuation of 19.135

19.138 Experimental Personality (Prereq. 19.161 or 19.164) 4 Q.H.

Introduction to methods and areas of research on personality. Includes problems of measurement, behavioral and dynamic concepts, and a laboratory project.

19.140 Normal and Abnormal Human Development (Prereq. 19.161, or 19.164) 4 Q.H.

The behavioral examination of developmental abnormalities—as evidenced in mental retardation, childhood schizophrenia, child delinquency, hyperactivity, specific learning problems, and aging—is used to illuminate normal developmental processes.

19.146 Motivation (Prereq. 19.106) 4 Q.H.

The various aspects of motivation, primary and secondary drives, unconscious motivation, effective motivation, the assessment of motives. This course is not designed for students majoring in Psychology, who cover this material in required advanced courses (see catalog section on Learning, Behavioral Analysis, and Behavior Modification).

19.155 Psychology of Language (Prereq. 19.106) 4 Q.H.

Topics include: the child's acquisition of language, verbal habits, the analysis and measurement of meaning, cultural determinants of linguistic behavior, communication processes, and recent research in psycholinguistics.

19.156 Psychology of Thought (Prereq. 19.155) 4 Q.H.

Psychological factors in problem solving, imagination, intuition, information processing, and concept learning.

19.157 Cognition and Human Learning (Prereq. 19.106) 4 Q.H.

A review of the verbal learning literature (studies dealing with paired-associate learning, serial learning, memory and attention) from a cognitive point of view. Higher-order mental processes, such as concept attainment, language development, probability learning. A consideration of mathematical models of human cognitive behavior.

19.202 Dynamic Psychology I (Prereq. 19.136, Middler Standing) 4 Q.H.

Discussions of the abnormal personality, historical background, criteria of abnormality, theoretical framework of normal and abnormal development, anxiety and defense, etiology, dynamics, and symptomatology of the neuroses.

19.203 Dynamic Psychology II (Prereq. 19.202) 4 Q.H.

Survey of psychotherapeutic techniques; etiology, dynamics and symptomatology of the psychoses; psychosomatic, sociopathic and organic disorders in the context of personality problems.

GENERAL ISSUES FOR PSYCHOLOGISTS

19.210 Scientific Foundations of Psychology (Prereq. Junior Psych. major) 4 Q.H.

The evaluation of modern psychology in the light of its historical origins. This course is designed especially for Psychology majors who are preparing for graduate school admissions and/or civil service examinations, both of which emphasize familiarity with historical issues, the work of major contributors to psychology, and the methods, data and theoretical systems they developed. Students often find this course most useful when taken at the end of the junior year or start of the senior year, shortly before the relevant examinations are scheduled.

19.278 Ethical Problems of Psychology (Prereq. Senior Psych. major) 4 Q.H.

A seminar examining some moral and ethical controversies associated with modern

psychologies theories and practices. What should be the goal of psychology? Is a commitment to scientific determinism consistent with humanistic goals? Is "mental illness" a myth? Are men controlled or basically free? Should psychologists attempt to control behavior and change attitudes? Is deception of experimental subjects justifiable? How can pseudoscientific psychological theories be distinguished from legitimate ones? Works to be discussed include those of Laing, Maslow, Sartre, Skinner, and Szasz.

19.279 Impact of Psychology on Society (Prereq. Senior Psych. major) 4 Q.H.

A seminar considering such recent developments as the uses of intelligence and aptitude tests, psychosurgery and electroconvulsive therapy, techniques of behavior modification and control, direct brain stimulation by implanted electrodes, use of psychoactive drugs, use of lie detectors, and the application of experimental techniques to humans.

19.280 Senior Seminar (Prereq. Senior Psych. major) 4 Q.H.

Small groups of students meet to discuss topics in psychology of mutual interest. Each seminar has a different flavor, depending on the student group and faculty member participant. At the start of each year, faculty members scheduled for this course describe a range of prospective topics for discussion each quarter (in the Psychology Department's course pamphlet, available from secretaries in 440 UR), to assist students in selecting the most appropriate seminar for their interests.

19.281 Social Change Seminar (Prereq. 19.168) 4 Q.H.

The relevance of behavioral principles to the design of social communities, the role of coercion (e.g., police, prisons, military) in the social system, a discussion of constructive alternatives to coercion, the relevance of law to individual behavior, the role of science in society, and the role of the university in society.

SPECIAL EXPERIENCES IN PSYCHOLOGY

19.285-289 Teaching Practicum in Psychology (Prereq. Dept. approval) (each) 4 Q.H.

Students who have received the grade of A in PSI courses may serve as undergraduate peer-teachers in subsequent quarters of the course, under the guidance of each course instructor. Includes a seminar on teaching technology and tutorial methods, how to handle individual study problems, analysis of case studies, etc. An undergraduate may repeat this course for P-F elective credit (counting toward Psychology major requirements) by teaching in several PSI courses. Application for participation in each course is made by communicating with the appropriate instructor at least one month before the start of each quarter.

19.290-294 Directed Study (Prereq. Dept. approval) (each) 4 Q.H.

Independent work under the direction of members of the Department, usually in a research project in one of the Department laboratories. Faculty members usually require completion of advanced laboratory courses in the area of research interest, but this is a matter of individual discussion. If you are interested in Directed Study, but are unsure of whom to approach for potential sponsorship, schedule a chat with your adviser.

19.295-298 Honors Program (each) 4 Q.H.

For prerequisites and other details, see the section on Honors in this catalog.

SERVICE COURSES (NOT ELECTIVES; NOT FOR PSYCH. MAJOR CREDIT)

19.101 Introductory Psychology 3 Q.H.

A discussion of psychological principles for students with career interests in health sciences and professions. (Assigned curriculum.)

19.102 Basic Psychology 4 Q.H.

A discussion of psychological principles for students with career interests in health sciences and professions. (Assigned curriculum.)

19.141 Growth and Development I 4 Q.H.

Emphasis on infancy and childhood. Fundamental processes of growth and development from conception to the beginning of adolescence; physical development and maturation;

socialization; social and interpersonal relations; intelligence, emotion, motivation and personality concepts. Emphasis upon family setting as well as upon broader social environment. (Assigned curriculum.)

19.142 Growth and Development II 4 Q.H.

Adolescence and adulthood. Exploration of physical and social changes in the years from adolescence to senescence. (Assigned curriculum.)

19.201 Psychology of Abnormal Behavior (Prereq. 19.140 or 19.141) 4 Q.H.

The symptomatology, etiology, dynamics, and therapy of the abnormal personality; the basic varieties of neurosis and psychosis; somatic therapies and fundamental varieties of psychotherapy. (Assigned curriculum.)

Anthropology

20.100 Principles of Social Anthropology 4 Q.H.

Basic principles.

Staff

All Quarters

20.130 Language and Culture 4 Q.H.

The function of language in human society and an introduction to the relationship between the patterns of language and the patterns of culture.

Prof. Bateson

Fall and Winter Qtrs.

20.135 Individual and Culture 4 Q.H.

An exploration of the ways in which the individual is shaped by his society and the ways in which he can effect change.

Staff

Spring and Summer Qtrs.

20.140 Evolution and Society 4 Q.H.

Human social and cultural evolution, and the theories which account for it.

Staff

Spring and Summer Qtrs.

20.160 Anthropology of the Family 4 Q.H.

Western scientific and popular conceptions and misconceptions about the nature of the family and family interaction in our own culture, in other cultures, and among animals. Advice on how to run a family will NOT be given!

Staff

Fall and Winter Qtrs.

20.170 Culture in Transition 4 Q.H.

Analysis of the changing patterns in social, economic, and political institutions. Modern social trends are discussed.

Staff

Winter and Spring Qtrs.

20.210 Tribal Societies and Cultures 4 Q.H.

The structures and institutions of bands, tribes, and chiefdoms; comparative and functional studies of tribal societies and the dynamics of change under contact situations.

Staff

Fall or Winter Qtrs.

20.214 Peasant Society and Culture 4 Q.H.

Institutions of peasant society. The structure of traditional civilizations and the interrelations between urban and local communities; comparative and functional analysis of the peasant community and the dynamics of change from peasant to post-peasant and industrialized societies.

Staff

Fall or Winter Qtrs.

20.220 Anthropology Methods 4 Q.H.*

Theory and practice of methods of field research and the analysis of data. Students take part in a field project.

Staff

Spring Qtr. alternate years.

*Including lab.

20.230 Language and Communication

4 Q.H.

Human communication, including language, theories of the evolution of language; language and kinesics, semiotics, social class, linguistic nationalism; linguistic problems in modernization.

Prof. Bateson

20.240 Human Origins

4 Q.H.

An intensive look at the data on fossil remains and the data on contemporary primates which are essential for an understanding of human physical and behavioral evolution. Efforts are made to bring the student into direct contact with primary materials.

Prof. Leibowitz

20.245 Cultural Ecology

4 Q.H.

An introduction to questions of human adaptation to environment and the effect of different adaptations on natural systems.

Staff

20.250 Political Anthropology

4 Q.H.

Origin and growth of the institutions of civilization. Specialization and social stratification in the dynamics of traditional civilizations; some special topics of contact and change.

Staff

20.255 Economic Anthropology

4 Q.H.

Types of economic systems in simple societies; reciprocal, redistributive, market exchange; economic relations as part of social relations; land tenure systems, credit systems, savings mechanisms. The transition from subsistence to cash economics.

Staff

20.257 Religion and Myth

4 Q.H.

Nature and institutionalization of primitive, ancient, and contemporary religions. Exploration of religious concepts and movements in relation to social, religious, and political organization.

Profs. Freilich and Bateson

20.259 Urban Anthropology

4 Q.H.

Selected problems in anthropological studies in urban societies.

Staff

20.260 Kinship and Society

4 Q.H.

This is a course for the advanced student only. A variety of kinship systems and their terminological and structural components, and the way in which their systems articulate with other social institutions.

20.270 Social Change and Economic Development

4 Q.H.

Selected studies of processes of transformation and modernization in nonindustrial societies.

Staff

20.280, 20.281, 20.282, 20.283, 20.284, 20.285, etc.

4 Q.H. (each)

Ethnographic area courses (New World Indian, Africa, India, Mediterranean, etc.) which will be offered as the Department's resources permit.

20.290-291 Directed Study

(Prereq. Department approval) 4 Q.H.

Independent work under the direction of members of the Department upon a chosen topic. Limited to qualified seniors preparing in anthropology with approval of the Department Chairman.

Staff

All Quarters

20.295, 296, 297, 298 Honors Program

All Quarters (each) 4 Q.H.

20.801-802 Theory

Qualified undergraduates may wish to take this course which is offered in the graduate school. Permission of the instructor is required for registration.

Sociology

21.100 Introduction to Sociology

4 Q.H.

Staff

All Quarters

21.107 Social Psychology

(Prereq. 21.100 or consent) 4 Q.H.

A social psychological approach to individual behavior in social contexts; introduction to basic concepts, such as socialization, identity, self-concept, role conflict, attitudes, and attitude measurement, groups and group processes, as well as an overview of major theoretical orientations and important substantive topics.

Profs. Golden and Levin

Fall and Winter Qtrs.

21.109 The Sociology of Everyday Life

(Prereq. 21.100 or equiv.) 4 Q.H.

The development, application, and consequences of rules for everyday activities (e.g., walking, talking, eating, drinking, sitting, smoking, laughing, crying, and sleeping); the effects of space, equipment, and territory on these activities on social life; and the expression of the emotions.

Prof. Rubington

Spring Qtr.

21.111 American Society

(Prereq. 21.100 or equiv.) 4 Q.H.

American society, culture, and major social institutions; economic, religious, governmental, familial, educational, welfare, and recreational; social classes and stratification, mobility, and individualism.

Profs. Lee and Rubin

Fall and Winter Qtrs.

21.112 Sociology of Poverty

(Prereq. 21.100 or consent) 4 Q.H.

An analysis of American poverty in historical perspective, drawing on comparisons with other countries. Critical evaluation of sociological research and theories relating to poverty. Consideration of causes and effects of poverty, as well as societal responses to poverty and its consequences. Suitable for students in applied fields, such as nursing, criminal justice, education, allied health, pre-med, and pre-law.

Profs. Holton and Krause

Spring and Summer Qtrs.

21.116 Environment and Society

(Prereq. 21.100 or equiv.) 4 Q.H.

Traditional perceptions of environment and man, contrasting Judaeo-Christian and other cultures such as Southwest American Indian and Japanese. Origins of contemporary conservation movement and concern with resource management in America. Public policy and public response to such environmental issues as population, air and water pollution, waste disposal, and land management. Environmental quality as ideology and the search for measureable indicators. Implication of international approaches to the understanding and control of ecosystems.

Prof. Rubin

Spring and Summer Qtrs.

21.118 Population and Society

(Prereq. 21.100 or equiv.) 4 Q.H.

Traditional and contemporary approaches to human population and its control. Factors affecting birth and death rates. Societal implications of population quantity and quality in several situations, past and present. Rural-urban migration and mobility; racial, genetic, stratificational components for population analysis. Public policies and public response to fertility control in several societies. International efforts to understand and to generate action on population issues.

Prof. Rubin and Holton

Fall and Winter Qtrs.

21.120 Sociology of the Family

(Prereq. 21.100 or equiv.) 4 Q.H.

The family as a social institution in several selected cultures; interrelations of the family and political, economic, and educational institutions; social nature of personality; role-taking; and the effects of individualism, mobility, and industrialism.

Profs. Holton and Lee

Fall and Spring Qtrs.

21.131 Crime, Conflict, and Justice

(Prereq. 21.100 or consent) 4 Q.H.

Analysis of social and political forces which create and perpetuate criminality in contem-

porary U.S. society; the impact of criminality upon law enforcement, judicial process, and the social order. Particular attention is devoted to violence as a means of resolving problems. In addition, this course examines the involvement of the legal system in processes of social conflict and change.

Prof. Garrett

Fall and Winter Qtrs.

21.135 Juvenile Delinquency

(Prereq. 21.100 or equiv.) 4 Q.H.

The sociological and psychological approaches and their implications for a typology of delinquency; problems of prevention, treatment, and rehabilitation.

Prof. Garrett

Spring and Summer Qtrs.

21.137 Social Deviance I

(Prereq. 21.100 or consent) 4 Q.H.

The conditions under which people categorize others as different; processes by which persons so defined are assigned deviant status and assume appropriate roles and self-images; development of deviant careers and their relationship to deviant subcultures; situations in which people transform deviant identity.

Profs. Rubington and Garrett

Fall Qtr.

21.138 Social Control I

(Prereq. 21.100 or consent) 4 Q.H.

Formation of social bonds and the conditions under which they are ruptured; the emergence of deviance as an interactional problem; the types of individual and societal reactions to the most prevalent forms of deviant behavior. Analysis of agencies of social control, their definitions of problems, and responses to typical clients.

Profs. Rubington and Garrett

Winter Qtr.

21.139 Social Problems

(Prereq. 21.100 or consent) 4 Q.H.

Analysis of five major sociological perspectives on social problems (pathology, disorganization, value-conflict, deviance, and labeling); the conditions under which certain recurrent events, activities, and persons become redefined as social problems (e.g., mine disasters, marijuana smoking, and alcoholism); study of the typical responses to social problems and their consequences.

Profs. Rubington, Holton, and Garrett

Spring Qtr.

21.141 Drugs and Society

(Prereq. 21.100 or equiv.) 4 Q.H.

An introduction to the sociology of drugs. The course first examines social definitions of drugs, conditions of their use, and socialization into drug use. It then considers deviant drug use and effects of social control on definitions and use. A range of licit and illicit drugs will be considered but major emphasis will be given to alcohol, marijuana, and heroin.

Prof. Rubington

Spring Qtr.

21.145 Urban Society

(Prereq. 21.100 or consent) 4 Q.H.

The foundations of city life in historical perspective; relationship of city life to environment, population, social organization, technology, and cultural values; growth trends, urbanization, and urban planning.

Profs. Rubin and Holton

Fall and Winter Qtrs.

21.150 Race and Ethnic Relations

(Prereq. 21.100 or equiv.) 4 Q.H.

Racial nationalities and religious groups, particularly with reference to the United States; special emphasis on historical development, specific problems of adjustment and assimilation, and specific present-day problems and trends.

Profs. Holton, Golden, and Lee

Fall and Winter Qtrs.

21.151 Sociology of Prejudice

(Prereq. 21.100 or consent) 4 Q.H.

Factors in the development and maintenance of prejudice and discrimination. Topics include: American race relations, anti-Semitism, sex roles, and stereotyping.

Profs. Levin, Golden, and Leibowitz

Fall and Winter Qtrs.

21.155 Medical Sociology

(Prereq. 21.100 or consent) 4 Q.H.

An examination of the professions, training, institutions, and problems in health care, with an emphasis on the United States. Practical issues in the improvement of health care systems are

considered.

Profs. Holton and Krause

Spring Qtr.

21.165 Industrialism and Industrial Man

(Prereq. 21.100 or consent) 4 Q.H.

The role of industry in modern society; similarities and dissimilarities among industrial societies, bureaucracy and its alternatives, unions, supervision democracy and manipulation, the man on the assembly line, sabotage of the organization, and the role of wages and alienation.

Prof. Rysman

Winter and Spring Qtrs.

21.175 Technology and Society

(Prereq. 21.101 or consent)

Does society control technology or is technology directing society? Has technology become dehumanized? How valid is the doctrine of technological inevitability? Can the technological "fix" be viewed as a "solution" to social problems? Is technology itself a social problem? What can be expected of "technology assessment"? What of the back-to-nature and anti-technology movements today: are they the waves of the future? These are some of the questions and issues which are discussed and analyzed. Students are expected to do considerable independent study and research.

Prof. Kaplan

Fall and Winter Qtrs.

21.176 Science and Society

(Prereq. 21.101 or consent)

The primary focus is on science rather than on technology. Exploration of the ways in which society affects, and is in turn affected by science. The emphasis is on science as a system of thought which includes a variety of methodologies and techniques, as an occupation and profession, and as one of several institutions which engage human beings and which affects the course of human history and development. Students are expected to do considerable independent study and research.

Prof. Kaplan

Spring Qtr.

21.200, 21.201 Group Behavior—The Sociological Imagination

(Prereq. consent of the instructor) 4 Q.H.

Limited to 15 students. An experimental course in which students act as a group in developing sociological imagination and perspective. Responsibility for learning in the group.

Prof. Geer

Fall, Winter, and Spring Qtrs.

21.207 Seminar in Social Psychology

(Prereq. 21.100 or consent) 4 Q.H.

Focus on the interaction of psychological and group processes. Students read original theoretical and research monographs in the field. Topics may include: prejudice, reference groups, sex roles, conformity, leadership, aggression, communication, collective behavior, and achievement.

Profs. Golden and Levin

Spring Qtr.

21.215 Collective Behavior (Prereq. consent or five Soc.-Anthropology courses) 4 Q.H.

The rise of new group forms in response to persistent social unrest; study of masses, crowds, and publics; analysis of specific instances of collective behavior such as race riots, wildcat strikes, prison revolts, and campus disorders.

Prof. Rubington

Spring Qtr.

21.217 Mass Communication and Public Opinion

(Prereq. consent or four Soc.-Anthropology courses) 4 Q.H.

Topics include: factors in the formation and development of public opinion, the effect of television on children, mass communication as social organization, media-depicted images of society, the role of personal influence, the process of rumor, the use of the mass media by the poor, propaganda analysis, the latent and manifest functions of mass communication.

Prof. Levin

Spring Qtr.

21.231 Sociological Theories of Crime

(Prereq. consent or four Soc.-Anthropology courses) 4 Q.H.

Patterns and social forces involved in criminal behavior. Analysis of sociological theories of

criminality and comparison of these to other explanations of crime.

Prof. Garrett

Fall and Winter Qtrs.

21.236 Applied Sociology; Practice and Theory

(Prereq. consent or four Soc.-Anthropology courses) 4 Q.H.

An analysis of the conditions under which sociological knowledge is applied to social problems, the kinds of problems, and the degree of effectiveness of this application. Particular attention is paid to research and demonstration projects that derive from sociological theory.

Prof. Rubington

Fall Qtr.

21.237 Social Deviance II

(Prereq. 21.137 or consent) 4 Q.H.

An examination of the leading theories of deviance (anomie, subcultural deviance, labeling) and their principal variants; study of their assumptions, conceptions, proposition, and supportive evidence; analysis of empirical studies in each theoretical tradition.

Profs. Rubington and Garrett

Winter Qtr.

21.238 Social Control II

(Prereq. 21.138 or consent) 4 Q.H.

Study of the formation of new social policies in response to social problems; analysis of policy and problem, supporters and opponents of policy change, conditions under which control agencies adopt new policies, and effects of policy change. Particular emphasis on case studies of social action and legal change.

Prof. Rubington

Spring Qtr.

21.239 Intro. to Statistical Analysis

(Prereq. consent or four Soc.-Anthropology courses) 4 Q.H.*

Application to social data of the principles of measurement, probability, measures of centrality, tests of significance, and techniques of association and correlation.

Prof. Levin

Fall and Winter Qtrs.

21.240 Research Methods I (Prereq. consent or 4 Soc.-Anthropology courses) 4 Q.H.*

An introduction to social research, including survey techniques, design of research, interviewing, questionnaire construction, use of existing data, and content analysis. Students take part in a survey.

Prof. Golden

Fall and Winter Qtrs.

21.241 Research Methods II (Prereq. consent or four Soc.-Anthropology courses) 4 Q.H.*

Analysis of social data by means of coding, tabulating, and statistically interpreting information from surveys and other sources.

Prof. Golden

Spring and Summer Qtrs.

21.245 Community Analysis (Prereq. consent or 4 Soc.-Anthropology courses) 4 Q.H.

Ecological, social structure, identity, and social action aspects of human settlements. Deals with change and conflict at the community level.

Profs. Rubin and Holton

Alternate Spring Qtrs.

21.246 Seminar in Urban Studies

(Prereq. 21.100 or consent) 4 Q.H.

Interdisciplinary approaches to urban studies are compared according to problem areas and research methods. Students have the opportunity to extend previous term paper projects after exposure to social action and social systemic theoretical perspectives.

Prof. Rubin

Spring Qtr.

21.250 Political Sociology; Who Gets What

(Prereq. consent or four Soc.-Anthropology courses)

An examination of formal political structures and informal quasi-political groups. Sociological analysis of ideology, class politics, mass movements, and the conflict of various social and economic groups as they vie for political power and influence.

Profs. Krause and Lee

Spring and Summer Qtrs.

*Including lab.

21.255 Sociology of Formal Organizations: Men, Machines, and Bureaucracy

(Prereq. consent or four Soc.-Anthropology courses) 4 Q.H.

A study of principles of formal organization. Theories of bureaucracy and concept of authority; communication systems and other conceptions of formal organization. Structure of work groups and their effect on the larger organization. The social content of organizations.

Profs. Krause and Rysman

Fall and Winter Qtrs.

21.260 Social Stratification: Class, Status, and Power

(Prereq. consent or four Soc.-Anthropology courses) 4 Q.H.

Theories of social inequality, concepts of social class, aspects of status and role difference, criteria for social mobility.

Profs. Krause, Holton, and Rysman

Fall and Winter Qtrs.

21.265 Sociology of Occupations and Professions

(Prereq. consent or four Soc.-Anthropology courses) 4 Q.H.

The meanings of work. Division of labor and specialization. Analysis of occupational structure and patterns of recruitment, training, and career preferences. The classic professions and new trends in professionalization.

Prof. Krause

Spring and Summer Qtrs.

21.270 Social Change

(Prereq. consent or four Soc.-Anthropology courses) 4 Q.H.

Social and cultural dynamics, with particular reference to the current contact situation occurring between industrialized and non-industrialized societies.

Prof. Lee

Spring Qtr.

21.280 Social Theory I

(Prereq. or four Soc.-Anthropology courses) 4 Q.H.

The development of sociology from the history of social thought. The emergence of several schools, beginning with Positivistic Organicism and Conflict Theory.

Staff

Fall and Winter Qtrs.

21.281 Social Theory II

(Prereq. consent or four Soc.-Anthropology courses) 4 Q.H.

A seminar-lecture course in which Formalism, Social Behaviorism, Social Action Theory, and Functionalism are studied critically.

Staff

Spring and Summer Qtrs.

21.287 Senior Seminar

4 Q.H.

Staff

Fall, Winter, and Spring Qtrs.

21.290, 21.291 Directed Study

(Prereq. Junior or Senior standing in Sociology or consent) (each) 4 Q.H.

Independent work on a chosen topic under the direction of members of the Department. Limited to qualified students with approval of Department chairman.

All Quarters

21.291 Seminar in Current Emphases in Sociology

Review and discussion of selected sociological topics.

Staff

Spring Qtr.

21.295, 21.296, 21.297, 21.298 Honors Program

(each) 4 Q.H.

All Quarters

Political Science

22.101 Introduction to Political Science I

4 Q.H.

Basic political concepts and forces of organization from the classical Greeks to the modern nation-state. The Soviet Union and the United Kingdom are contrasted as contemporary illustrations of the institutional distinction between a totalitarian and a constitutional system.

Staff

22.102 Introduction to Political Science II

4 Q.H.

The development of operational liberty in the United States and its constitutional underpinnings are considered, together with an analysis of the national American political process and the conduct of recent American foreign relations.

Staff

Winter and Spring Qtrs.

22.131 American National Government

(Prereq. 22.102) 4 Q.H.

An analysis of the structure and functions of American government: the development of legislative policy and the nature of constitutional restraints on public power.

Prof. Worth

22.132 Political Behavior

(Prereq. 22.101) 4 Q.H.

An investigation of attitudes, perceptions and socialization as they relate to political preferences and actions, utilizing materials and concepts of the studies of culture, psychology, and society.

Profs. Jones and Schmitt

Spring and Summer Qtrs.

22.133 Political Parties and Pressure Groups

(Prereq. 22.102 or 22.131) 4 Q.H.

An analysis of political parties and pressure groups in the American political system, focusing on collective decision making, electoral strategy, and party responsibility.

Prof. Pfeiffer

22.134 The American Presidency

(Prereq. 22.102 or 22.131) 4 Q.H.

A multi-faceted examination of the nation's Chief Executive. The Presidential electoral process, the President's many constituencies, and the differing styles of various 20th-century Presidents. The constitutional and extra-constitutional powers of the office are some areas that are considered.

Prof. Cord

22.135 American Constitutional Law

(Prereq. 22.102 or 22.131 and Junior or Senior status) 4 Q.H.

Employing excerpts of U.S. Supreme Court decisions and other reading materials, this course attempts an analysis of some of the theoretical, structural, and substantive issues inherent in and relevant to the American constitutional system.

Prof. Cord

22.137 Civil Liberties

(Prereq. 22.102 or 22.131 and Junior or Senior status) 4 Q.H.

Employing U.S. Supreme Court decisions and other reading material, this course examines the substantive and procedural guarantees of the Bill of Rights and the Fourteenth Amendment and their relationship to a liberal democratic society.

Prof. Cord

22.139 American Ideology

4 Q.H.

The performance of American government measured against its ideal objectives as outlined in its ideologies.

Prof. Worth

Fall and Winter Qtrs.

22.141 State Government and Politics

(Prereq. 22.102 or 22.131) 4 Q.H.

The structure, functions and politics of the states, analyzing their role in the Federal system and their relationships with the national government, and their component local governments.

Prof. Berkley

22.143 Urban and Metropolitan Government

(Prereq. 22.141) 4 Q.H.

The political, structural and functional problems of an urbanizing United States, including analyses of urban, suburban, and metropolitan governmental systems and their roles in the Federal system.

Prof. Medeiros

22.145 Housing and Urban Renewal

(Prereq. 22.102, 22.143) 4 Q.H.

The technical, budgetary, intergovernmental and social problems of housing and urban

renewal.

22.146 Practical Politics

(Prereq. 22.102) 4 Q.H.

Designed to accentuate and treat systematically some of the problems of organizing for effective citizen action, partisan and nonpartisan, at the grass roots level. An exploration of roles in political campaigning.

Profs. Grimes and Pfeiffer

Fall and Winter Qtrs.

22.151 Comparative Government

(Prereq. 22.101) 4 Q.H.

European democratic and totalitarian forms of government. The United Kingdom, France, and West Germany.

Prof. Goldman

22.171 Law and Society

4 Q.H.

Introduction to the theory and philosophy of law; the historical foundations of the common law; legal methods. Primarily for non-Political Science majors.

Prof. Grimes

Summer Qtr.

22.173 Politics and Economic Problems

(Prereq. 22.102 or 22.177) 4 Q.H.

A survey of the relationship between economic developments and political processes in the United States. Among the topics considered are: government planning of the economy, monopoly and government regulation, government programs to promote social welfare, and the impact of Federalism on the political-economic system.

Prof. Berkley

Winter and Spring Qtrs.

22.175 Current Political Issues

4 Q.H.

An analysis of the constitutional and political background of selected contemporary public issues. Primarily for non-Political Science majors.

Prof. Grimes

Fall and Winter Qtrs.

22.177 American Political Process

4 Q.H.

A general analysis of the American political system, including national, state, and metropolitan governments and their interaction. Not open to Political Science majors or anyone who has taken 22.102 or 22.131 (American National Government).

Prof. Grimes

22.178 The Politics of the Criminal Justice System

(Prereq. 22.102 or 22.177) 4 Q.H.

The criminal justice system from arrest by police to appeal to the Supreme Court of the United States. The roles of police, lawyers, judges, prosecutors, juries, and correction officers will be examined.

Prof. Berkley

Spring and Summer Qtrs.

22.179 World Politics

4 Q.H.

An analysis of the behavior of nations in international society, with emphasis on major current developments. Not open to Political Science majors or anyone who has taken 22.221 (International Relations).

22.221 International Relations

(Prereq. 22.102) 4 Q.H.

Elements and limitations of national power, contemporary world politics, problem of peace.

Prof. Jones

Fall and Winter Qtrs.

22.223 American Foreign Policy

(Prereq. 22.102) 4 Q.H.

Formulation and conduct of foreign policy; role of the United States in politics since 1945.

Prof. Wilfong

22.224 United States—Far Eastern Relations

(Prereq. 22.102) 4 Q.H.

Diplomacy of the United States concerning the Far East, with both Asian and non-Asian governments. Emphasis on the American role in the evolution of the Far Eastern power distribution from World War II to the present.

Prof. Jones

22.225 Soviet Government

(Prereq. 22.151) 4 Q.H.

A study of Soviet political origins and behavior, with emphasis on recent changes in the party

and state apparatus, the economy, and the administration of justice.

Prof. Goldman

22.226 Soviet Foreign Policy (Prereq. 22.101 and Middler Status) 4 Q.H.

The evolution of Soviet foreign policy since 1917, with emphasis on the development of the international Communist movement and the onset of the East-West ideological conflict.

Prof. Goldman

22.227 Communism in Eastern Europe (Prereq. 22.101 and Middler Status) 4 Q.H.

The Communist governments of Eastern Europe, with emphasis on their growing independence from Soviet Russia. Recent political change, economic liberalization, and new orientation in foreign policy.

Prof. Goldman

22.228 Government and Politics in Africa (Prereq. 22.151 and Middler Status) 4 Q.H.

The governmental systems, political parties, socioeconomic problems, and foreign policies of selected states north and south of the Sahara.

Prof. Goldman

22.229 Government and Politics in North Africa (Prereq. 22.151) 4 Q.H.

A comparative analysis of the colonial experience, nationalism, and contemporary governmental and political organization and behavior in the Maghreb (Morocco, Algeria, Tunisia), Libya, Egypt, and the Sudan.

Prof. Goldman

22.230 Government and Politics in Sub-Saharan Africa (Prereq. 22.151) 4 Q.H.

A comparative analysis of the colonial experience, nationalism, and contemporary governmental and political organization and behavior in selected states south of the Sahara.

Prof. Goldman

22.231 International Organization (Prereq. 22.221) 4 Q.H.

Development of international organization, with special emphasis on the United Nations system.

Prof. Jones

22.233 International Law (Prereq. 22.221) 4 Q.H.

Territory and jurisdiction of states, treaties, recognition, peaceful settlement of disputes, resort to force.

Prof. Wilfong

22.240 Totalitarianism and Dictatorship (Prereq. 22.151) 4 Q.H.

An analysis of totalitarianism, dictatorship, and autocracy, including study of historical background, characteristics, theories of origin, nature, and significance, evaluation of techniques, ideologies (i.e., Marxism-Leninism), policies, and institutions. Particular attention is given to Soviet and German experience.

Prof. Bursey

22.242 The Politics of Revolution and Change (Prereq. 22.151) 4 Q.H.

An analysis of revolution and change, contemporary and historical, with attention to both theory and practice. Topics discussed include major trends in contemporary politics and society, and the relationship between political change and technological, scientific, or social change.

Prof. Bursey

22.243 Government and Politics of Communist China (Prereq. 22.221) 4 Q.H.

Government and party organization, socio-economic problems and policies, and foreign relations of Communist China. Attention is given to the influence of history and ideology as determinants of attitudes and behavior.

Prof. Goldman

Winter Qtr.

22.245 The Politics and Policies of Developing Nations (Prereq. 22.221) 4 Q.H.

A survey of recent political and related change among third-world countries of Africa, Latin

America, and Asia. Topics included are: the heritage of colonialism and achievement of independence, the realities of cultural pluralism, revolution and political violence, institution building, political leadership and role of ideology, political parties, military in politics, and international aspects of political modernization.

Prof. Schmitt

22.247 Government and Politics of Latin America (Prereq. 22.221) 4 Q.H.

The governmental systems, political parties, socioeconomic problems, and foreign policies of Latin American states.

Prof. Schmitt

22.261 Public Administration (Prereq. 22.102 or 22.131) 4 Q.H.

Introduction to the theory and practice of public administration, with special emphasis on the generalities of institutions, processes, and behavior of bureaucratic organizations.

Profs. Berkley and Medeiros

22.270 Political Theory (Prereq. Junior Status or consent of instructor) 4 Q.H.

An analytic approach to the study of key political concepts: e.g., power, stability, equality, freedom, authority, obligation.

Prof. Barkley

22.272 Selected Issues in Political Theory (Prereq. 22.271) 4 Q.H.

Intensive examination of some dominant issues in modern political theory.

Prof. Bursey

22.273 Political Thought I (Prereq. Junior Status or consent of instructor) 4 Q.H.

An analytical and historical examination of the great political thinkers and of the main ideas in political thought from the Renaissance.

Prof. Bursey

22.274 Political Thought II (Prereq. 22.273) 4 Q.H.

An analytical and historical examination of the great political thinkers and of the main ideas in political thought from the Renaissance to the 20th century.

Prof. Bursey

22.276 American Political Thought (Prereq. 23.211) 4 Q.H.

The contributions to political theory of the main social, economic, political, intellectual, and philosophic movements in America from the colonial period to the present.

Prof. Barkley

22.278 Contemporary Political Thought (Prereq. 22.101) 4 Q.H.

Analysis of current ideals, ideologies, and political movements, including Existentialism, Neo-Marxism, Black Power, Women's Liberation. The decline of ideology and behavioralism.

22.280 Research Methods in Political Science 4 Q.H.

An introduction to some of the most common methods of carrying out research in the discipline of political science. Problems of theory construction, data-gathering, and a selection of analytical research tools including bibliographical aids and the computer.

Prof. Pfeiffer

22.282 Seminar in American Government

(Prereq. Senior Political Science major and consent of instructor) 4 Q.H.

A study in depth of selected topics in American government.

Prof. Worth

22.283 Seminar in International Relations

(Prereq. Senior Political Science major and consent of the instructor) 4 Q.H.

A study in depth of selected topics in international relations.

Prof. Wilfong

22.284 Seminar in Comparative Politics

(Prereq. Senior Political Science major and consent of the instructor.) 4 Q.H.

A study in depth of selected topics in comparative politics.
Prof. Goldman

22.285 Senior Seminar in Political Science

(Prereq. Senior Political Science major) 4 Q.H.

A study in depth of selected topics in political science.
Prof. Barkley

22.287 The Politics of Poverty

4 Q.H.

An intensive examination of political, social, economic and legal approaches to poverty and the poor in America. The course will focus on four principal strategies for dealing with poverty: 1. rights for the poor, 2. equality of opportunity, 3. redistribution of income, and 4. rejection of material values.

22.290, 22.291, 22.292, 22.293 Directed Study

4 Q.H.

Independent work under the direction of members of the Department on a chosen topic. Limited to qualified Seniors majoring in Political Science, with approval of Department. Staff

22.295, 22.296, 22.297, 22.298 Honors Program

(each) 4 Q.H.

Staff

History

23.101 Western Civilization

4 Q.H.

The major ideas and institutions of Western Civilization from ancient times to 1648.
Prof. Fullington and Staff

23.102 Western Civilization

4 Q.H.

A continuation of 23.101, covering the period since 1648.
Prof. Fullington and Staff

23.109 Population in European History (Group A or B)

4 Q.H.

An application of the principles of demography to European history from Roman times to the present, with attention to the interaction of birth, death, marriage, and migration rates with climate change, epidemic disease, war, economic developments, social upheaval, and political policy.

Prof. Post

23.111 Ancient Greece (Group A)

4 Q.H.

The origins and development of Greek civilization; political evolution of Hellenistic society from tribal to city-state organization; growth and application of Greek religious, political, and ethical ideas.

Prof. Fullington

23.112 Ancient Rome (Group A)

4 Q.H.

Roman civilization in two sequences: 1. the rise of Roman power under the Republic, and 2. the decline of Roman power under the Empire.

Prof. Fullington

23.115 Medieval Europe (Group A)

4 Q.H.

Europe from the Barbarian Invasions to the late 13th century; the expansion of Christianity and the institutionalization of church and papacy; the emergence of the Holy Roman Empire, England, and France as political units; social, cultural, and economic developments.

Prof. Francois

23.116 Europe in the Age of the Renaissance (Group A)

4 Q.H.

Europe from 1300 to 1500, when alternatives to medieval institutions became increasingly apparent. Special attention to political, economic, and cultural changes in Italy and Northern

Europe.

Profs. Francois and Blaisdell

23.119 Europe in the Age of the Reformation (Group A)

4 Q.H.

Political, economic, social, and religious background of the Protestant and Catholic Reformations from 1500 to 1660. Emphasis also on the impact of the Reformation on Europe.

Profs. Francois and Blaisdell

23.120 Europe in the Age of Reason (Group B)

4 Q.H.

A survey of European history from 1660 to 1815, a time of great ferment climaxed by the French Revolution and Napoleon.

Prof. Francois

23.121 Nineteenth Century Europe (Group B)

4 Q.H.

Europe during a century of dramatic transformation: the Industrial Revolution, the post-Napoleonic reaction; liberalism, socialism, nationalism, and imperialism.

Profs. Allen and Anderson

23.122 Europe, 1870—1921 (Group B)

4 Q.H.

Europe from the Franco-Prussian War to the post-World War I settlement: the growing tensions and rivalries, and declining certainties of the end of the 19th century, the origins of World War I, the War itself, the Russian Revolution, and the Peace of Paris. (Not open to students who intend to receive credit for 23.125.)

Profs. Herman and Stembridge

23.123 Europe since 1921 (Group B)

4 Q.H.

Europe from the Versailles Settlement: the rise of totalitarianism, the Depression, the crises of liberalism and of the European mind, the Appeasement Era, World War II, the Cold War, the end of colonialism, and Europe today. (Not open to students who have received credit for 23.125.)

Profs. Allen, Herman, and Stembridge

23.124 Early Modern France (Group A)

4 Q.H.

Intensive study of the political, economic, social, and intellectual development of France from the end of the Hundred Years' War through the reign of Louis XIV.

Prof. Blaisdell

23.127 Eighteenth Century France (Group B)

4 Q.H.

The history of France in the age of the *ancien regime* and the Enlightenment as background for the French Revolution and Napoleon.

Prof. Blaisdell

23.128 Modern France (Group B)

4 Q.H.

A survey of the chief political, social, economic, intellectual, and cultural developments of France from the Revolution to the present.

Prof. Allen

23.129 Modern Germany (Group B)

4 Q.H.

A survey of German political, economic, social and cultural history since 1815.

Prof. Allen

23.130 England to 1688 (Group A)

4 Q.H.

Prehistoric Britain, the Anglo-Saxons, the Normans, the Plantagenets, the Tudors, and the Stuarts, with emphasis on the development of parliamentary institutions until the Glorious Revolution.

Profs. Francois and Blaisdell

23.131 England since 1688 (Group B)

4 Q.H.

England from the Glorious Revolution to the present, with emphasis on the development of Parliament, the Industrial Revolution, 19th-century reaction and reform, the World Wars, and

the rise of socialism.

Profs. Backstrom and Stembridge and Dean Ketchum

23.133 Stuart England (Group A)

4 Q.H.

England from 1603 to 1688, with emphasis on social and economic change and the origins of modern liberalism.

Prof. Backstrom

23.135 Victorian England (Group B)

4 Q.H.

The economic, social, and political life of the English people during Victoria's reign.

Prof. Backstrom

23.137 England since 1900 (Group B)

4 Q.H.

The economic, social, and political life of the English people in the 20th century.

Prof. Backstrom

23.140 Imperial Russia (Group B)

4 Q.H.

The emergence of Russia as a recognized European power, westernization and expansion in the 18th century, the impact of Napoleon, reform and revolution.

Prof. Fullington

23.141 Soviet Russia (Group B)

4 Q.H.

Forces molding the history of Russia since 1917, internal developments, foreign relations.

Prof. Fullington

23.143 Ancient Middle East (Group D)

4 Q.H.

From the origins of civilization in Egypt and Mesopotamia to the break-up of the ancient world in the fourth century, with emphasis on religion and culture.

Mrs. Frothingham

23.144 The Middle East, 315-1800 (Group D)

4 Q.H.

Contacts and conflicts between East and West, emphasizing the rise and flowering of Islam.

Mrs. Frothingham

23.145 The Modern Middle East (Group D)

4 Q.H.

The Middle East since 1800, with emphasis on the background to present problems.

Mrs. Frothingham

23.147 Africa before 1850 (Group D)

4 Q.H.

African prehistory, the formation of premodern societies, the dynamics of Afro-European contact before 1850.

Prof. Anderson

23.150 The Commonwealth Countries (Group D)

4 Q.H.

The evolution of the British Empire into the Commonwealth of Nations and the development of the principal Commonwealth countries (excluding Africa). Special emphasis on the history of Canada, Australia, New Zealand, and India.

Prof. Stembridge

23.151 Modern Africa (Group D)

4 Q.H.

The European impact on Africa, the rise of African nationalism, the emergence of independent African states, and the background of their present problems.

Prof. Anderson

23.152 Africa: National Histories (Group D)

4 Q.H.

Special studies of the histories of selected African nations.

Prof. Anderson

23.153 West African History (Group D)

4 Q.H.

The political, economic, social, and cultural history of the people of West Africa.

23.169 Far Eastern Civilization to 1850 (Group D)

4 Q.H.

Premodern histories and cultures of China, Japan, and Korea from antiquity to 1850.

Prof. Anderson

- 23.170 Modern Far East (Group D)** 4 Q.H.
The Far East since 1850, with emphasis on China and Japan and their relations with other nations.
Prof. Ring
- 23.181 European Economic History to 1750 (Group A)** 4 Q.H.
The major economic developments of Europe, including studies in agriculture, commerce, and industry.
Prof. Francois
- 23.182 Modern European Economic History (Group B)** 4 Q.H.
Survey of the development of the Western world examined within the framework of economic theory, with attention to social and political ramifications.
Prof. Post
- 23.199 The Historian's Craft** 4 Q.H.
The ways in which the historian studies the past and the nature of historical statements. Problems considered include research techniques, changing conceptions of historical knowledge, and the relationship between the historian and the society in which he works.
Prof. Post
- 23.201 Colonial America (Group C)** 4 Q.H.
The discovery and exploration of the New World, the settlement of the English colonies on the North American mainland, their development to 1763, and the origin of their clash with England.
Prof. Fowler
- 23.202 The American Revolution (Group C)** 4 Q.H.
The coming of the American Revolution, its nature and progress, and its political, economic, and social aftermath.
Prof. Fowler
- 23.210 The United States to 1877** 4 Q.H.
The history of the American people from 1763 to 1865, with an analysis of the American Revolution and of the major political, constitutional, diplomatic, economic, and social problems of the new nation.
Prof. Robinson and Staff
- 23.211 The United States since 1877** 4 Q.H.
A continuation of the survey of American history, with discussion of the emergence of an industrial economy, an urban society, world responsibility, and expanded Federal government.
Prof. Robinson and Staff
- 23.213 American Urban History (Group C)** 4 Q.H.
The development of urban society in the United States in the 19th and 20th centuries, with emphasis on the effects of immigration and industrialization upon the politics, thought, and society of American cities.
- 23.215 The United States, 1781—1825 (Group C)** 4 Q.H.
The political, economic, and psychological problems of adjustment to peace at the conclusion of the American Revolution; the development of an independent nation to 1825.
- 23.216 American Reformers and Reform Movements (Group C)** 4 Q.H.
An analysis of American reform, especially in the 19th century.
Prof. Jacobs
- 23.217 American Society and Politics in the 19th Century (Group C)** 4 Q.H.
An interdisciplinary examination of social structure and political behavior in late 19th-century America.
Prof. Campbell

23.218 The Civil War and Reconstruction (Group C)

4 Q.H.

The coming of the Civil War, its nature and progress, and the aftermath of Reconstruction.
Prof. Jacobs

23.220 The United States, 1890—1920 (Group C)

4 Q.H.

Populism, progressivism, World War I, and the reaction of the 1920s.
Prof. Bishop

23.221 The United States, 1920—1945 (Group C)

4 Q.H.

The Depression, the New Deal, World War II, and mid-century, emphasizing the clash between liberalism and conservatism and the movement from isolationism to interventionism.
Prof. Bishop

23.222 The United States since 1945 (Group C)

4 Q.H.

America's diverse responses to the postwar challenges of urbanization, economic change, civil rights, and Communism.

23.228 American Political Parties (Group C)

4 Q.H.

An examination of the emergence and development of parties from the Constitution to mid-20th century, with attention to their support, programs, and function.
Prof. Campbell

23.229 American Social Structure (Group C)

4 Q.H.

A topical survey of the American social structure, focusing on population processes, family structure, ethnicity, social classes, and mobility.
Prof. Campbell

23.241 Afro-American History (Group C)

4 Q.H.

The history of blacks in the English colonies and in the United States since the 17th century. The history of relations between white and black Americans. The evolution of institutions and attitudes of black Americans.
Prof. Jacobs

23.250 American Historians (Group C)

4 Q.H.

The literature of American history; major American writers of American history from the colonial period to the present, with emphasis on changing form and substance.
Prof. Robinson

23.251 American Biography (Group C)

4 Q.H.

The history of American biography since 1789 and biographies of representative Americans.
Prof. Robinson

23.276 Latin America to 1850 (Group D)

4 Q.H.

The fusing of the cultures of the Indian, the Iberian, and the Negro; the European and American forces which gave rise to the Latin American wars for independence; the early development of the new nations.
Prof. Bishop

23.277 Modern Latin America (Group D)

4 Q.H.

Latin America from the mid-19th century to the present; dictatorial republics and the continuation of poverty and injustice; the struggles toward democracy, the rise of nationalism, and the threat of Communism; the relations between the United States and Latin America.
Prof. Bishop

23.288 Seminar in Medieval History (Group A)

4 Q.H.

Prof. Francois

23.289 Seminar in European Intellectual History (Group B)

4 Q.H.

Not open to students who received credit for 23.126.
Prof. Herman

23.290 Seminar in Modern European History (Group B) Prof. Francois	4 Q.H.
23.291 Seminar in American History (Group C) Prof. Campbell	4 Q.H.
23.292 Seminar in Early Modern Europe (Group A) Prof. Francois	4 Q.H.
23.293 Seminar in the History of Socialist Thought (Group B) Prof. Backstrom	4 Q.H.
23.294 Seminar in French History (Group A or B) Profs. Allen and Blaisdell	4 Q.H.
23.295, 23.296, 23.297 Honors Program Staff	(each) 4 Q.H. Fall, Winter, and Spring Qtrs.
23.299 Directed Study Staff	4 Q.H. All Quarters

Afro-American Studies

25.050 Educational Issues for Black Americans

(Prereq. 25.251 or consent of instructor) 4 Q.H.

Issues in alternative schools, curricula, funding, and outcomes that concern black people. These issues are researched and critically analyzed as to what effect they will have on black America. The course takes the format of a seminar, with well-known guest speaker presentations integrated with usual class presentations.

25.051 Community School Approaches

4 Q.H.

25.100 Science and Black Society I

4 Q.H.

A firm foundation in science and scientific method is the groundwork for an interesting look at the implications of scientific investigations on black society. Has science really enriched the black society or has it hindered it? What are the far-reaching effects of the Tuskegee Project, the Eugenetics of Jensen and Shockley, legalized abortion and the population explosion, National Institute of Health (NIH)-granted policies, the shortage of black physicians? What has been the role of blacks in science? In short, we examine a myriad of questions in order to elucidate the interrelationships between science and the black society.

25.101 Science and Black Society II

(Prereq. 25.100 or consent of instructor) 4 Q.H.

25.109 Contemporary Black Issues in Statistics

4 Q.H.

25.140 Language Arts

(Prereq. 30.113 and consent of instructor) 4 Q.H.

Designed to sharpen the student's language skills, emphasizing the achievement of linguistic analysis and precision in English despite its second-language status for many blacks, and its several inherently anti-black uses and connotations.

25.141 Elementary Swahili

4 Q.H.

Essentials of grammar; practice in pronunciation and progressive acquisition of a basic vocabulary; idiomatic expressions.

25.143 Intermediate Swahili

(Prereq. 25.142) 4 Q.H.

Review of grammar, with practice in composition and conversation.

25.145 Elementary Arabic

4 Q.H.

Essentials of grammar; practice in pronunciation and progressive acquisition of a basic vocabulary; idiomatic expressions.

25.147 Intermediate Arabic

(Prereq. 25.145 or consent of instructor) 4 Q.H.

Review of grammar, with practice in composition and conversation.

- 25.149 Introduction to African Languages** 4 Q.H.
- 25.150 Blacks and the Media** 4 Q.H.
- 25.170 Economic Problems of Black Americans** 4 Q.H.
The correlation among social, political, and economic conditions of black people in the United States.
- 25.171 Poverty and Health Care** 4 Q.H.
- 25.172 Community Medicine and Delivery of Health Care** 4 Q.H.
- 25.180 Black Diseases** 4 Q.H.
- 25.181 Black Nutritional Habits** 4 Q.H.
- 25.210 Contemporary Problems in Black Society** 4 Q.H.
Study of contemporary psycho-political problems. From a study of this area in its global generality should come a careful paper on problem-solving in a specific area.
- 25.217 The Black Family** 4 Q.H.
- 25.218 The Black Man/Black Woman** 4 Q.H.
- 25.219 Researching Black Issues** 4 Q.H.
- 25.221 Black Ideologies** 4 Q.H.
An introduction to psychological politics which deals with the traditional approaches to political science, "The Political You", and the interdisciplinary nature of the social sciences.
- 25.222 Third World Political Relations** 4 Q.H.
An introduction to theory and practice of relations among nations. Special attention is given to relations between the "have" and "have-not" nations. Emphasis on Third World problems.
- 25.250, 251 Foundations of Black Culture I, II,** 4 Q.H.
An overview of the rich and varied aspects of life for all people of African descent. 25.250 studies black culture from ancient African cultures through the Civil War, and 25.251 from Reconstruction to the 70's. This introductory course in Afro-American Studies is team-taught by staff in history, literature, music, drama, education, human services, philosophy, and social sciences.
- 25.252 Organizing Black Communities** 4 Q.H.
A seminar designed for those students whose concerns and future professional involvements might be in the urban community.
- 25.253 Seminar: Wright/Ellison** (Prereq. Freshman English and consent of instructor) 4 Q.H.
Detailed study of the works of Richard Wright and Ralph Ellison. Designed for junior and senior students with an interest in literary style and content of these two exemplary black writers.
- 25.254 Black Community and Social Change** (Prereq. 25.251 or consent of instructor) 4 Q.H.
Study of those components of the black community which exercise (active or passive) social control: the black church family, ethos. What environmental factors make us what we are? What environmental controls make for change? For what kind of change?
Offered 1974-75
- 25.257 Field Seminar** (Prereq. consent of instructor) 4 Q.H.
A practical program of carefully supervised field work, designed to provide a special opportunity for career preparation. First-hand knowledge of the realities of working in a given situation are expected to begin development. This course is closely supervised by the appropriate staff member in a given area, and is intended to supplement classes and co-op in a particular area of career preparation.
Offered 1974-75

25.258 Directed Study

(Prereq. consent of instructor) 4 Q.H.

A scholarly piece of independent research under the supervision of an instructor or professor of Afro-American Studies (or, by mutual consent, another Department). The student is expected to choose an academic problem of particular interest to him, in light of his career preparation, and to develop the tools to show how it might be solved.

Offered 1975-76

25.259 Directed Study Toward Senior Thesis

(Prereq. consent of instructor) 4 Q.H.

All majors are required to do a substantive senior thesis. Advisors in the student's area work closely with each candidate to show how his scholarly and career preparation best merges into a final project; where applicable, a field work component is encouraged.

Offered 1975-76

25.260 Black Ethics

(Prereq. consent of instructor) 4 Q.H.

Philosophical treatment of changes in traditional Western ethics produced by such notions as "Black Power", "The New Morality", "The New Left". Should be especially useful for students in Philosophy, Criminal Justice, and Afro-American Studies programs.

25.270 Black Aesthete in Design

4 Q.H.

25.271 History of Afro-American Art

4 Q.H.

25.280 African Rhythms and Harmonies

4 Q.H.

25.281 Black Music

4 Q.H.

General survey of Afro-American music in the U.S., traced from its origins in Africa to the present. Intended to introduce the student to the vast and rich expanses of black musical culture from a musical and socio-historical standpoint.

25.920 Afro-Americans and the Law

4 Q.H.

The following courses may also be of interest to the student wishing to concentrate in Afro-American Studies. Descriptions for these courses may be found in the appropriate departmental listing.

21.145	Urban Society
21.150	Race and Cultural Relations
21.270	Social Change
20.250	Political Anthropology
20.255	Economic Anthropology
20.259	Urban Anthropology
22.132	Political Behavior
22.133	Political Parties and Pressure Groups
22.137	Civil Liberties
22.171	Law and Society
22.228	Government and Politics in Africa
22.229	Government and Politics in North Africa
22.233	International Law
22.242	The Politics of Revolution and Change
22.245	The Politics and Policies of Developing Nations
22.270	Political Theory
22.278	Contemporary Political Thought
23.241	*Afro-American History I
23.242	*Afro-American History II
23.153	West African History
26.101	Introduction to Philosophy I
26.102	Introduction to Philosophy II
26.155	Moral Philosophy
26.120	Existentialism

26.131	Social Philosophy
30.267	*Afro-American Literature I
30.268	*Afro-American Literature II
30.269	The Black Novel
30.276	African Literature

**Required for majors*

Philosophy

26.101 Introduction to Philosophy I

26.102 Introduction to Philosophy II

(each) 4 Q.H.

An examination of some of the central and persistent issues in philosophy. These courses are independent and may be taken in reverse order. Both emphasize philosophical thinking as an activity rather than the assimilation of an established body of facts. 26.101 includes such topics as theories of reality, theories of knowledge, and philosophical problems in religion. 26.102 includes such topics as social and political philosophy and philosophies of art and history.

Staff

26.101-Fall and Winter Qtrs.

26.102-Spring and Summer Qtrs.

26.110 History of Ancient Philosophy

4 Q.H.

From early Greek philosophy before the time of Socrates to the Christian Period. Emphasis upon the thought and influence of Socrates, Plato, and Aristotle; secondary attention given to the Epicureans, the Stoics, and the Neo-Platonists.

Prof. Fogg

Fall and Winter Qtrs.

26.111 History of Modern Philosophy

(Prereq. 26.110 or consent of instructor) 4 Q.H.

European philosophy from the Renaissance to the 19th century; emphasis upon Francis Bacon, Descartes, Spinoza, Locke, Berkeley, Hume, and Kant.

Prof. Fogg

Spring and Summer Qtrs.

26.117 Nineteenth-Century Philosophy

(Prereq. 26.110 and 26.11 or consent of instructor) 4 Q.H.

Selected trends in this century, such as the development of German idealism, romanticism, evolutionism, materialism, and positivism. Hegel, Schopenhauer, Nietzsche, Kierkegaard, and Marx are representative.

To be announced

Not offered 1973-74

26.118 Twentieth-Century Philosophy

(Prereq. 26.110 and 26.11 or consent of instructor) 4 Q.H.

Contemporary philosophic movements in metaphysics and methodology exemplified by process philosophy, linguistic analysis, pragmatism, phenomenology, and existentialism.

To be announced

Not offered 1973-74

26.119 American Philosophy

(Prereq. 4 Q.H. of philosophy or consent of instructor) 4 Q.H.

Background to American philosophy: Locke, Newton, Jonathan Edwards, and Cadwallader Colden. The American Enlightenment: Jefferson, Paine, and Benjamin Rush. Pragmatism: Peirce, James, Dewey, and Meade. Realism: Perry and Sellars. All of the above are dealt with in this course.

Prof. Hacker

Not offered 1973-74

26.120 Existentialism

(Prereq. 4 Q.H. of philosophy or consent of instructor) 4 Q.H.

The influence of Kierkegaard and Nietzsche upon 20th-century existentialism; its critique of scientific and traditional philosophy; the influence of existentialism upon literature and theology; emphasis upon Jaspers, Heidegger, Marcel, Sartre, and Camus.

Prof. Kovaly

Fall and Winter Qtrs.

26.121 Analytic Philosophy (Prereq. 8 Q.H. of philosophy or consent of instructor) 4 Q.H.
The development of the analytic movement from its beginnings in the early works of Moore and Russell. Some treatment of Russell's logical atomism, the logical positivists, the thought of Ludwig Wittgenstein, and their widespread influence.

Prof. DeAngelis

Not offered 1973-74

26.130 Aesthetics

4 Q.H.

An analysis of the nature and meaning of aesthetic experience and the principles of art criticism. The possibility of standards in art and the relation of art to ethics, society, and religion are discussed.

Prof. Hacker

Fall and Winter Qtrs.

26.131 Social Philosophy (Prereq. 4 Q.H. of philosophy or consent of instructor) 4 Q.H.

A study of the major forms of political and social organization, with particular emphasis on the analysis and explanation of social change. Some attention given to the more general topic of the nature of explanation in the social sciences.

Prof. Kovaly

Spring and Summer Qtrs.

26.133 Philosophy of Science

(Prereq. 4 Q.H. of philosophy *unless required in your major*) 4 Q.H.

An examination of key concepts in the methodology of science: scientific explanation, prediction, confirmation, laws, and theories.

Prof. Hacker

Not offered 1973-74

26.134 Philosophy of Religion

4 Q.H.

Examines and evaluates such problems as arguments for and against the existence of God, derived from reason and experience; analytical and psychological approaches toward religious belief; concept of immortality; nature of revelation and faith; the relation between science and religion.

Prof. Wellbank

Fall and Winter Qtrs.

26.135 Philosophy of Man (Prereq. 4 Q.H. of philosophy or consent of instructor) 4 Q.H.

An historic, philosophical inquiry into different theories of man, dimensions and characteristics of man, with a special interest in conceptions of the alienation of man. Selected readings include: Descartes, Hobbes, Hegel, Marx, Kierkegaard, Maritain, Fromm, Marcuse, and Frankel.

Prof. Kovaly

Not offered 1973-74

26.137 Philosophy and Literature

4 Q.H.

Analysis of basic philosophic themes expressed in such writers as: Tolstoy, Dostoevski, Thomas Mann, Sartre, Camus, Kafka, Hesse, Bellow, and others.

Prof. Kovaly

Not offered 1973-74

26.150 Introduction to Logic ✓

4 Q.H.

Recognition of common fallacies, practical exercises in effective argument, formal principles of correct and incorrect reasoning; entails traditional, deductive logic. Included are formal and informal fallacies.

Prof. Hacker and Staff

All Quarters

26.151 Symbolic Logic

(Prereq. 4 Q.H. of philosophy or consent of instructor) 4 Q.H.

The application of formal symbolic techniques to logic: elementary first-order deductive logic is covered; some consideration of the theory of identity, and the metatheory of first-order logic may be included.

To be announced

Fall and Winter Qtrs.

26.152 Epistemology (Prereq. 4 Q.H. of philosophy or consent of instructor) 4 Q.H.

Major theories, problems and concepts in the theory of knowledge: problems of scepticism and the justification of beliefs; the nature of knowledge and truth; relation of reason and experience to knowledge.

Prof. Nathanson

Spring Qtr.

- 26.153 Metaphysics** (Prereq. 4 Q.H. of philosophy or consent of instructor) 4Q.H.
The central questions of metaphysics, as well as a survey of the metaphysical positions of major importance.
To be announced Spring Qtr.
- 26.155 Moral Philosophy** 4 Q.H.
A critical appraisal of value and obligation, human rights, economic and criminal justice, and such issues as ethical relativity and empiricism, from the standpoint of rule-utilitarianism.
Prof. Wellbank Spring Qtr.
- 26.156 Modern Ethical Theories** (Prereq. 26.155 or consent of instructor) 4 Q.H.
The aim is to study intensively some recent major developments in moral philosophy. The topics selected are: the cognitivist-noncognitivist controversy in meta-ethics, the concept of social justice in normative ethics, human rights, punishment, and the adequacy of rule utilitarianism as a normative ethical theory.
Prof. Wellbank Not offered 1973-74
- 26.174 Christian Faith and the Problem of Interpretation** 4 Q.H.
An examination of 20th century attempts at understanding the meaning of Christian faith. Beginning with some of the classical approaches to New Testament interpretation, the study concentrates on issues raised by Albert Schweitzer's "Quest of the Historical Jesus," Rudolph Bultmann's "Demytheologizing," and the problem of the new hermeneutics.
Staff Not offered 1973-74
- 26.175 Faith and Tradition in India** 4 Q.H.
An examination of selected historical, philosophical, and theological elements of Indian tradition, with special emphasis on post-Buddhist periods. The influence of Indian thought in the Far East is examined, as well as the influence of British Western civilization on Indian culture.
Prof. Pruett Not offered 1973-74
- 26.177 Understanding Religious Man** 4 Q.H.
An examination and critical analysis of the major methods and definitions of religion, with emphasis on the anthropological, sociological, theological, and phenomenological means of isolating religious experience. The issues of the nature and function of religion are discussed.
Staff Fall and Winter Qtrs.
- 26.178 Religion in a Social Context** 4 Q.H.
An exploration of the social forms of religion in America. The structures and roles of the church, synagogue, and sect are described and critically evaluated. In addition, emphasis is given to their function, with reference to general social structure, process, and reform.
Staff Not offered 1973-74
- 26.180 Myths and Dreams as Religious Experience** 4 Q.H.
An inquiry into the basic dimensions of religious experience as illuminated by myths and dreams. A reading of myths from both Eastern and Western cultures in order to elucidate the world pictures they create. An attempt is made to identify the questions of man and world to which these myths respond.
Staff Fall and Winter Qtrs.
- 26.181 Paradigms for Religious Experience** 4 Q.H.
A study of selected spiritual leaders and founders of religion such as Buddha, Socrates, Confucius, and Jesus, the unique dimensions of whose life and teachings provide paradigms for religious experience. It is an attempt to identify the concrete meaning of religious experience, to discover the means of communicating faith, and to describe the relations as well as differences between the "teacher" and "saviour".
Staff Spring and Summer Qtrs.
- 26.182 Religion in the Age of Science** 4 Q.H.
An examination of the problems posed by the interaction between religion and the natural

and social sciences. Representative selections from David Hume, Charles Darwin, Karl Marx, Sigmund Freud, Eric Ericson, and Ernest Troeltzch are used to interact with selections from Rudolph Bultmann, Teilhard de Chardin, Reinhold Niebuehr, Dietrich Bonhoeffer, and Paul Tillich.

Staff

Fall and Winter Qtrs.

26.183 Ways of Being Religious

4 Q.H.

An identification and appraisal of different ways of approaching religion: the dogmatic, the rational, the mythical, the ritualistic, the mystical, the moral, and the pragmatic. It serves as an introductory course geared to the humanistic interests of the undergraduate student.

Staff

Spring and Summer Qtrs.

26.190, 191, 192 Honors Program

(each) 4 Q.H.

Staff

All Quarters

26.201 Area Course: Mind and Language

(Prereq. 4 Q.H. of philosophy or consent of instructor) 4 Q.H.

Contemporary challenges to mind-body dualism by linguistic philosophers, with emphasis upon their analyses of such concepts as intelligence, consciousness, will and rationality. Recent views concerning the effects of language on thought, perception, and world-views are also discussed.

Prof. DeAngelis

Fall and Winter Qtrs.

26.234 Advanced Philosophy of Religion (Prereq. 26.134 or consent of instructor) 4 Q.H.

A critical inquiry into such problems in religious belief as: the criteria for demythologization, the logic of prayer, faith, miracles, and revelation, and the general problem verification of religious belief.

Prof. Wellbank

Spring Qtr.

26.256 Seminar: Moral Philosophy

(Prereq. 26.155, 26.156, or consent of instructor) 4 Q.H.

An intensive examination of some meta-ethical problems associated with contemporary utilitarianism, such as the possibility of a non-cognitive utilitarianism, universalizability, and ethical argument, and such normative problems as social justice, human rights, and punishment.

Prof. Wellbank

Fall and Winter Qtrs.

26.265 Seminar in Wittgenstein

(Prereq. 8 Q.H. of philosophy or consent of instructor) 4 Q.H.

The overall development of Wittgenstein's thought, with special emphasis upon his later work as presented in the *Philosophical Investigations*. Subjects of importance include: language and thought, meaning, philosophical psychology, knowledge and experience, the nature of philosophy.

Prof. DeAngelis

Spring Qtr.

26.266 Seminar in Dewey (Prereq. 8 Q.H. of philosophy or consent of instructor) 4 Q.H.

Prof. Hacker

Spring Qtr.

26.268 Seminar in Russell (Prereq. 8 Q.H. of philosophy or consent of instructor) 4 Q.H.

Russell's thought, with emphasis on his views concerning knowledge, language, mind, and matter; his influence on contemporary thought. Some attention paid to his social and political political writings.

Prof. Nathanson

Fall and Winter Qtrs.

26.272 American Faiths

4 Q.H.

Denominational institutions as influential forces in American society, and the religious and ideological commitments of Americans.

Staff

Spring Qtr.

26.274 Seminar in Judaism (Prereq. 8 Q.H. of philosophy or consent of instructor) 4 Q.H.

Prof. Pruett

Not offered 1973-74

26.275 Contemporary Religious Issues in the Western World

(Prereq. 26.174 or consent of instructor) 4 Q.H.

An analysis of some major developments in Christianity and Judaism in the context of industrialization and urbanization. An exploration of the impact of secularism upon the religions of the West as evident in Neo-Orthodoxy, Bonhoeffer's "Religionless Christianity," the radical theology of the death of God, and the trends toward a new humanism.

Staff

Fall and Winter Qtrs.

26.276 Mysticism: East and West (Prereq. 26.177, 26.180, or consent of instructor) 4 Q.H.

An inquiry into mystical experience through a comparative study of the writings of Christian, Buddhist, and Hindu mystics, and secondary interpretive sources. Areas taken up are: the potential oneness of man and God, the conflict of mystics with traditional forms of religion, and the possibility of a common cross-cultural basis for mysticism.

Prof. Pruett

Spring Qtr.

26.279 Issues in Contemporary Islam

(Prereq. 26.177, 26.180, or consent of instructor) 4 Q.H.

A discussion of such issues in 20th-century Islam as: Pan-Islamic movements; relations with Israel and the West; the Qu'ran as lawbook; social change in modern Islamic countries through Western influence; variation on the theme of Islam in Africa, Turkey, and Iran; and the Muslim view of history.

Prof. Pruett

Not offered 1973-74

Art**27.113 Creative Drawing**

4 Q.H.

Creative drawing in pen and ink, pencil, and crayon, with emphasis on form and texture.

Prof. Wells

Fall and Winter Qtrs.

27.114 Theory of Color and Design

4 Q.H.

Techniques and theories of design and color in painting.

Prof. Bishop

Not offered 1973-74

27.115 Basic Painting

4 Q.H.

Practice and creative expression in the basic techniques of painting, including study of color, space and form.

Prof. Bishop

Fall, Winter and Spring Qtrs.

27.116 History of Film Art I

4 Q.H.

A history of the development of film art from the late 19th century to the 1930s. Selected films are screened and studied. Lab fee.

Prof. Bishop

Fall and Winter Qtrs.

27.117 History of Film Art II

4 Q.H.

A history of the development of film art from the 1930s to the present. Selected films are screened and studied. Lab fee.

Prof. Bishop

Spring Qtr.

27.118 History of Art I

4 Q.H.

A survey of western art from prehistoric times to Renaissance.

Prof. Davis

Fall and Winter Qtrs.

27.119 History of Art II

(Prereq 27.118) 4 Q.H.

A survey of western art from the Renaissance to the 20th century.

Profs. Wells and Serenyi

Spring Qtr.

27.120 French Film

4 Q.H.

A survey of French film making from the late 19th century to the present. Selected films are screened and studied. Lab fee.

Prof. Bishop

Not offered 1973-74

27.121 Contemporary Directions in Cinema

4 Q.H.

A comparative study of selected films by major contemporary directors. Films are screened and studied. Lab fee.

Prof. Bishop

Not offered 1973-74

27.131 Ancient Painting and Sculpture I

4 Q.H.

A concentrated study of art from prehistoric times to Greek civilization, including Egyptian, Mesopotamian, and Aegean art.

Prof. Davis

Not offered 1973-74

27.133 Italian Renaissance Art I

4 Q.H.

A study of Italian painting and sculpture of the 14th and 15th centuries.

Prof. Serenyi

Fall Qtr.

27.136 Classical Art

4 Q.H.

A concentrated study of Greek and Roman art.

Prof. Davis

27.137 Nineteenth Century Painting

4 Q.H.

European painting of the 19th century, with special emphasis on romanticism, realism, and impressionism.

Prof. Sereni

Fall Qtr.

27.139 Medieval Painting and Sculpture

4 Q.H.

Romanesque and Gothic painting and sculpture from the 10th to the 15th centuries.

Winter Qtr.

27.141 Baroque and Rococo Painting

4 Q.H.

European painting of the 17th and 18th centuries.

Prof. Wells

Fall, Winter, and Spring Qtrs.

27.143 Mexican Art

4 Q.H.

A concentrated study of Pre-Columbian art from the Archaic and Classical periods to the present.

Prof. Davis

Fall and Winter Qtrs.

27.144 Latin American Art

4 Q.H.

The arts of architecture, sculpture, and painting of various countries of Latin America except Mexico, from Pre-Columbian times to the 20th century.

Prof. Davis

Fall and Winter Qtrs.

27.148 European Graphic Arts

4 Q.H.

The history of graphic arts from the medieval period to the end of the 19th century. The development of engraving, woodcutting, etching, aquatint, and lithography and the work of representative artists.

Prof. Wells

Spring 1974

27.149 American Graphic Arts

4 Q.H.

Development of the graphic arts in America from the colonial times to the present as shown through the works of representative artists.

Not offered 1973-74

27.150 History of Photography

4 Q.H.

A concentrated study of the development of photography, with special emphasis on American photographic art to the present.

Prof. Holden

Not offered 1973-74

27.151 Modern Painting

4 Q.H.

Painting from the late 19th century to the present.

Prof. Wells

Fall and Spring Qtrs.

27.152 Introduction to Art

4 Q.H.

A basic course in the characteristics of style, media, and techniques of painting, sculpture,

- graphic arts, architecture, and film art. Serves as a foundation for future study in art history.
Prof. Wells Fall Qtr.
- 27.154 Italian Renaissance Art II** 4 Q.H.
Italian painting and sculpture of the 16th and early 17th centuries.
Spring Qtr.
- 27.161 American Art I** 4 Q.H.
Development of American architecture, sculpture and painting from colonial times.
Prof. Holden Fall and Winter Qtrs.
- 27.162 American Art II** 4 Q.H.
American architecture, sculpture and painting from 1860 to the present.
Prof. Holden Spring Qtr.
- 27.171 Ancient Architecture** 4 Q.H.
The architecture of Egypt, Greece, and Rome.
- 27.172 Medieval and Renaissance Architecture** 4 Q.H.
Romanesque, Gothic, and Renaissance architecture.
- 27.173 Modern Architecture I** 4 Q.H.
A study of architecture and city planning from 1850 to 1920.
Prof. Serenyi Fall Qtr.
- 27.174 Modern Architecture II** 4 Q.H.
The great figures and the chief movements of 20th-century architecture and city planning.
Prof. Serenyi Winter and Spring Qtrs.
- 27.175 Late 19th-Century American Architecture** 4 Q.H.
A survey of the Stick and Shingle Architectural Styles, as well as more general developments. Introductory lectures are followed by student presentations on selected topics.
Prof. Holden Spring Qtr.
- 27.176 Contemporary Architecture** 4 Q.H.
Architecture and city planning since World War II, with special emphasis on their forms, theories, and social implications.
Prof. Serenyi Not offered 1973-74
- 27.177 History of Architecture** 4 Q.H.
A survey of the stylistic characteristics of architecture from ancient periods to the present.
Prof. Holden Fall and Winter Qtrs.
- 27.181 Oriental Art I** 4 Q.H.
The prehistoric arts of India, China, and Japan; the rise and spread of international Buddhist art; the national Indian styles of sculpture, architecture, and painting.
Not offered 1973-74
- 27.182 Oriental Art II** 4 Q.H.
National styles of painting, sculpture, architecture, ceramics, and printmaking in China, Korea, and Japan.
Not offered 1973-74
- 27.183 Seminar in Modern Art and Architecture**
(Prereq. one course in art history since the Renaissance) 4 Q.H.
Selected topics in modern art and architecture.
Prof. Serenyi Not offered 1973-74
- 27.295, 27.296, 27.297 Honors Program** (each) 4 Q.H.
Staff Fall, Winter, and Spring Qtrs.
- 27.291, 27.292, 27.293 Directed Study** (each) 4 Q.H.
Staff Fall; Winter, and Spring Qtrs.

Music

- 28.100 Music I** 4 Q.H.
Introduction to selected works of our musical heritage from earliest times to contemporary styles. Primarily a survey and listening course, with emphasis on styles, basic theory, forms, and the historical, social, and artistic periods which these works represent.
Staff Fall, Winter and Spring Qtrs.
- 28.101 Music II** (Prereq. 28.100, 28.102, 28.106, 28.10120) 4 Q.H.
An in-depth continuation of 28.100 aimed at the further development of appreciation and understanding of selected works of our musical heritage. The course consists of a detailed study of these works and their relationships to the artistic milieu in which they are created.
Profs. C. Norvish and Sonnenschein September 1974
- 28.102 Music Fundamentals** 4 Q.H.
Introduction to music notation. Course stresses melodic, rhythmic, harmonic, and contrapuntal idioms culminating in the creative application of materials.
Prof. Silverman Spring Quarter
- 28.103 Music Form** 4 Q.H.
The study of major musical works with emphasis on their structural design (binary and ternary forms, fugue, rondo, theme and variations, etc.).
- 28.106 Theory I, Tonal Techniques I** 4 Q.H.
Essentials of tonal technique: fundamentals, ear training, sight singing, and dictation.
Prof. Keaney Fall and Winter Qtrs.
- 28.107 Theory II, Tonal Techniques B** (Prereq. 28.100, 28.102, 28.106) 4 Q.H.
Advanced ear training, sight singing, dictation, and musical analysis; harmonic principles of chords and their inversions.
Prof. Keaney Spring Qtr.
- 28.108 16th-Century Counterpoint** 4 Q.H.
Sight singing, ear training, composition in contrapuntal forms, and writing of species counterpoint.
- 28.109 18th Century Counterpoint** (Prereq. 28.100, 28.102, 28.108) 4 Q.H.
Sight singing, ear training, composition in contrapuntal forms, and analysis of selected works of J. S. Bach.
- 28.112 Music of the Baroque** 4 Q.H.
The development of instrumental writing; evolution of opera, oratorio, and cantata in the works of such composers as Monteverdi, Corelli, Handel, Vivaldi, and J.S. Bach.
Prof. Keaney Spring Qtr.
- 28.113 Bach** 4 Q.H.
The music of J. S. Bach and of the era which produced him. Church and secular works are studied.
Prof. C. Norvish Fall and Winter Qtrs.
- 28.115 Music of the Classical Era** 4 Q.H.
The period of music history between Bach and Beethoven. Aspects of classical style in instrumental and vocal works are discussed. Emphasis is placed on the music of Haydn and Mozart.
Prof. Sonnenschein Spring Qtr.
- 28.116 Great Literature for Keyboard Instruments** 4 Q.H.
The study of music for keyboard instruments (clavichord, harpsichord, organ, pianoforte, and synthesizer) from the 16th century to present. Emphasis will be placed on the evolution of keyboard instruments and differences in techniques required to play them as developed by various composers.
Prof. Hache' Spring Qtr.

28.117 Medieval and Renaissance

4 Q.H.

The development of sacred and secular monohony, vocal and instrumental works, and of polyphonic music from its beginning to about 1600.

28.119 Since Webern: The Avant-Garde

4 Q.H.

The avant-garde in music; total serialism, musique concrete, electronic music, chance music. The avant-garde in jazz, folk, rock, and pop.

28.120 Survey of Music History

4 Q.H.

An inclusive study of the men, ideas, and events that have shaped music history from ancient times through the Renaissance, Baroque, Classical, and Romantic eras to our own time. Among the composers whose works are studied are: Josquin, Bach, Mozart, Beethoven, Wagner, Mahler, and Stravinsky.

Prof. C. Norvish

Fall and Winter Qtrs.

28.123 Music of the Romantic Era

4 Q.H.

Romantic realism and idealism in the 19th century. Emphasis is placed on historical, nationalistic, and literary influences in music. Composers studied include: Beethoven, Schumann, Schubert, Berlioz, Liszt, Chopin, Verdi, Wagner, Brahms, Tchaikovsky, and Mahler.

Profs. Silverman and Snyder

Fall, Winter, and Spring Qtrs.

28.124 Traditional Folk Music of the Western World

4 Q.H.

A study of ethnic music of Europe, sub-Saharan Africa, and North and South America and their influence in Western musical culture.

Prof. Silverman

Fall and Winter Qtrs.

28.125 Great Choral Literature

4 Q.H.

Analysis of sacred and secular choral literature from medieval to contemporary times.

Mr. Jacobson

Fall and Winter Qtrs.

28.126 Music as a Means of Social Expression

4 Q.H.

A general and philosophical view of music in Western culture. Emphasis is on social themes (war-peace, love-rejection), rather than on musical form. Pertinent examples from the other arts are used.

28.135 Music of the U.S.A.

4 Q.H.

American music from Puritan psalm singing to the present time. Folk music of ethnic origin, concert music, ragtime, jazz, and contemporary styles are discussed.

28.136 Music in Popular Culture

4 Q.H.

Emphasis on the 20th century, especially the last 20 years. Thought is given to various subcultures as seen in folk, jazz, rock, and soul. Reference is made to popular music of other countries.

Prof. Tesson

Fall, Winter, and Spring Qtrs.

28.138 Nationalism in Music

4 Q.H.

A study of national schools of music. Among the composers studied are: the Russian "Five", Smetana and Dvorak of Bohemia, Sibelius of Finland, Grieg of Norway, Gade of Sweden, Liszt and Bartok of Hungary, Gottschalk, MacDowell, and Ives of the U.S., and others.

Prof. Silverman

Spring Qtr.

28.139 The Music of Non-Western Societies

4 Q.H.

A survey of the music of African, southeast Asian, Indian, and near Eastern societies and the social and spiritual functions of music in these cultures.

28.140 Mozart

4 Q.H.

A musical development from child prodigy to mature artist is traced from his own letters and from biographies. Many of his major works, including opera, symphonies, concertos, and chamber music, are analyzed in detail.

28.141 20th-Century Music: Debussy to Schoenberg

4 Q.H.

The developments in music from 1900 to mid-century. Impressionism, Expressionism, Neo-

Classicism, Post Romanticism, and Neo-Nationalism.

Prof. Hache'

Fall and Winter Qtrs.

28.142 Stravinsky

4 Q.H.

His life and works; *Le Sacre, Petrouchka, Symphony of Psalms*, and more recent works are given detailed attention. His contributions to 20th-century style—neo-classicism, pan-diatonicism, additive style—are analyzed and his strong influence on other composers is noted.

28.145 Beethoven

4 Q.H.

An analysis of the complex personality and art of this major figure. His relation to the turbulent times in which he lived; his role in classical and romantic music.

Prof. Snyder

Fall and Winter Qtrs.

28.146 Mahler

4 Q.H.

A study of his major works and aesthetic principles. His many large scale symphonic and vocal works will be viewed in two ways:

1. as a consummation of 19th-century Romanticism, and
2. as a forerunner of 20th-century Expressionism.

Prof. C. Norvish

Spring Qtr.

28.160 The Symphony

4 Q.H.

A study of the symphony as the major genre in the classical, romantic and contemporary periods. Works by Haydn, Mozart, Beethoven, Schumann, Tchaikovsky, Brahms, Sibelius, Prokofiev, and others are studied.

Profs. Sonnenschein and Nadeau

Fall, Winter and Spring Qtrs.

28.170 Chamber Music

4 Q.H.

Ensemble pieces for small groups. Examples for analysis are selected from all periods from the Baroque to the present.

28.180 Introduction to Opera

4 Q.H.

Analysis of opera as a dramatic form. Aria, recitative, ensemble, and other basic elements of opera are isolated and discussed. Numbers Opera, Music Drama, and Singspiel are some of the types of opera considered. Composers whose works are analyzed include Mozart, Wagner, Verdi, and Puccini.

Prof. Snyder

Fall and Winter Qtrs.

28.181 Contemporary Opera

4 Q.H.

Almost every major composer including Schoenberg, Berg, Bartok, Stravinsky, Hindemith and Poulenc have contributed to the opera repertory, thus illustrating 20th century style. Among the works studied are: *Wozzeck, The Rake's Progress, Dialogue of the Carmelites*, and *Bluebeard's Castle*.

Prof. Snyder

Spring Qtr.

28.182 Wagner's Ring Cycle

4 Q.H.

An in-depth study of Wagner's Cycle of music drama; *Das Rheingold, Walkure, Siegfried, Gotterdammerung*, Wagner's compositional techniques (e.g., the use of leitmotif and musical metaphor) is examined in detail.

28.190 The Concerto

4 Q.H.

The concerto is studied from its origins in the Baroque era to its crystalization during the 18th and 19th centuries. Concerti grossi, as well as solo works for various instruments, are studied in detail.

28.200 Jazz

4 Q.H.

Jazz from its origins in New Orleans to the avant-garde experiments of today. The rhythmic, harmonic, instrumental, and stylistic characteristics of jazz are analyzed. Attention is given to the work of creative jazz artists such as Armstrong, Beiderbecke, Parker, Ellington, and Coltrane.

Profs. Mitchell and Tesson

Fall and Winter Qtrs.

28.201 Jazz II

(Prereq. 28.200 Jazz I) 4 Q.H.

In-depth study of various recorded works of important jazz performers/composers with respect to their work as creative artists. The study is not chronological, but deals with the dynamics of artistic growth and change. Special attention is given to developments of the last decade.

Profs. Mitchell and Tesson

Spring Qtr.

28.202 Black Artist in Music

4 Q.H.

A study of the contributions of black composers and performers to the world of music.

Prof. Mitchell

Spring Qtr.

28.230 Musical Performance I

(Prereq. audition or permission of instructor) 1 Q.H.

Participation in rehearsals and public performances and/or research, composition, arranging, conducting, solo and ensemble activity, etc., with the Chamber Orchestra, the Early Music Players, the NU Chorus, the NU Bands, or other ensembles, under the supervision and coaching of a faculty member of the Music Department. The student's progress will be evaluated at the end of the quarter by audition or otherwise.

28.231 Musical Performance II

1 Q.H.

28.232 Musical Performance III

1 Q.H.

28.233 Musical Performance IV

1 Q.H.

(Continuations of 28.230)

Drama and Speech

29.100 Public Speaking

3 Q.H.

A participation course for students interested in acquiring skills and experience in public communication. Emphasis on conversational delivery, organization, and audience analysis.

Staff

Spring and Summer Qtrs.

29.101 Public Speaking

(Prereq. 29.100) 3 Q.H.

Speech patterns which involve effective discussion; analysis, evidence, and reasoning as factors in convincing and persuading people.

Staff

Not offered 1973-74

29.102 Effective Speaking

3 Q.H.

The study of verbal and nonverbal features of communicative and expressive utterance. Consideration of principles and methods of effective communication in the preparation and delivery of various types of speeches.

Staff

All Quarters

29.105 Argumentation and Debate

(Prereq. 29.100 or 29.102 or consent of instructor) 4 Q.H.

Argumentation and debate presented as techniques of a free society, bringing reasoned discourse to bear on personal and social problems for purposes of decision and action. Attention is given to the various forms of debating technique.

Prof. Woodnick

Not offered 1973-74

29.106 Speech Fundamentals

3 Q.H.

An overview of speech communication, examining areas of voice and articulation, oral interpretation, and public speaking.

Staff

Fall and Winter Qtrs.

29.107 Interpersonal Communications

4 Q.H.

Ways of becoming more aware of self and one's relation to others. An exploration of various options for communicating and increasing one's knowledge of group process.

Profs. Woodnick and Rothbard

Fall and Winter Qtrs.

29.108 Business and Professional Speaking

4 Q.H.

Practice on oral presentations, group communication, conference and discussion techni-

ques, interview methods, and occasion speaking. The course combines performance aspects with case study methods of communication on the professional level.

Profs. Woodnick and Eastman

All Quarters

29.109 Speech for the Theatre

(Prereq. 29.110) 4 Q.H.

Special speech problems confronting actors performing in classical and contemporary theatre.

To be announced

Winter Qtr.

29.110 Voice and Articulation

4 Q.H.

The study of voice technique: emphasis on pitch, projection, articulation, and vocal variety. A combination of theory and practical application.

Profs. Woodnick and Eastman and Mrs. Littlefield

All Quarters

29.111 Oral Interpretation

4 Q.H.

Application of basic vocal techniques to the dramatic reading of prose, poetry, and drama. Through literary analysis the author's meaning is understood and, by means of oral reading skills, communicated to an audience.

Prof. Eastman

Fall and Winter Qtrs.

29.112 Advanced Voice and Articulation (Prereq. 29.110 or consent of instructor) 4 Q.H.

Development and application of vocal technique acquired in 29.110. Emphasis on vocal analysis, flexibility, regional patterns of speech.

Prof. Woodnick

Spring and Summer Qtrs.

29.113 Effective Speaking Workshop

1 Q.H.

Communication through individual speaking and small group conferences.

Staff

Spring and Summer Qtrs.

29.114 Advanced Oral Interpretation

(Prereq. 29.111) 4 Q.H.

Further development of oral reading skills acquired in 29.111. In addition, the course includes work with accents and dialects, study of reader's theatre, and an investigation of classical and modern philosophies of the art.

Prof. Eastman

Spring Qtr.

29.115 Theories of Persuasion

4 Q.H.

Persuasive discourse as it effects and refutes the process of dynamic social change; approaching critically the theories of persuasion derived from historical, philosophical, and psychological sources and their application to contemporary problems of politicking, mass media, and advertising as they influence attitude, opinion, and action.

Prof. Rothbard

Fall and Winter Qtrs.

29.116 Persuasive Techniques

(Prereq. 29.115) 4 Q.H.

Application of the principles of persuasion to preparation and delivery of speeches and to critical analysis of modes of persuasion in representative speeches.

Prof. Rothbard

Spring Qtr.

29.117 Group Discussion

4 Q.H.

Focus on the task-oriented group; development of skills in decision-making, problem-solving, membership, and leadership. Both the content and the process are discussed and analyzed.

Prof. Rothbard

Spring Qtr.

29.118 Speech Communication in Education

4 Q.H.

Through lectures, discussions, and performance projects an investigation is made of several activities. They are: conference and discussion techniques, both in decision-making situations and as teaching techniques; personal interviews, collective bargaining, and various speech situations involving the teacher's several audiences.

Prof. Eastman

Fall and Winter Qtrs.

29.119 Explorations in Communication

4 Q.H.

Designed to provide basic knowledge and understanding of the processes involved in the

transference of meanings. An analysis of contemporary concepts of human communication. Projects in examining cases of communication breakdowns, feedback systems, problems of modern channels, and sender-receiver analyses.

Mrs. Littlefield

Fall and Winter Qtrs.

29.120 Introduction to Theatre Arts

(for non-Drama majors) 4 Q.H.

A brief view of the historical development of acting, directing, and production design. Emphasis on appreciation of contemporary theatrical forms.

Staff

Fall and Winter Qtrs.

29.121 Survey of the Theatre I

4 Q.H.

Introduction to the drama as a dynamic medium of human expression; historical development of the theatrical form. Reading and analysis of selected plays as they relate to form, genre and style from the viewpoint of audience and artist.

Prof. Blackman

Fall and Winter Qtrs.

29.122 Survey of the Theatre II

4 Q.H.

Introduction to the theatre as a collaborative art form (theoretical and practical), with an emphasis upon acting, directing, designing, lighting, and the necessities of theatre economics.

Mr. Bailey

Winter and Spring Qtrs.

29.123 Propaganda

(Prereq. 29.115 or 29.119) 4 Q.H.

A descriptive and analytical survey of propaganda techniques and devices used in a conscious attempt to manipulate and ultimately control behavior.

Prof. Rothbard

Fall and Winter Qtrs.

29.127 The Mass and the Media

4 Q.H.

An exploration of the many media through which man expresses himself: i.e., music, art, film, radio, television, theatre, graffiti. Supplementing the course are lectures, films, and attendance at various productions.

Prof. Woodnick

Fall and Winter Qtrs.

29.130 Makeup

4 Q.H.

The principles of, the reasons for, and the materials used in makeup for the theatre, television, and films. The practical application of types and styles of makeup: straight, old-age, character, and corrective.

Winter Qtr.

29.150 Elementary Acting I

(Prereq. Drama major or consent of instructor) 4 Q.H.

Fundamental techniques of stage use. The actor and his stage environment. Improvisations for strengthening imagination and increasing freedom. Analysis of scripts for work on performed scenes.

Prof. Kaplan

Fall and Winter Qtrs.

29.151 Elementary Acting II

(Prereq. 29.150) 4 Q.H.

Fundamental analysis of the script, including physicalizations and vocal scoring; character analysis; scenes performed for classroom analysis.

Prof. Kaplan

Spring Qtr.

29.152 Intermediate Acting III

(Prereq. 29.151) 4 Q.H.

Further development of the actors tools, script and character scoring, exercises for physical and psychological freedom. In-class scenes as works-in-progress.

Prof. Kaplan

Spring Qtr.

29.156 Stage and Body Movement

(Prereq. Drama major or permission of instructor) 4 Q.H.

A workshop course in movement and improvisation techniques, which explore inner resources and allow the actor greater freedom of expression on the stage.

Spring Qtr.

29.160 Concepts of Direction (Prereq. Drama major or permission of instructor) 4 Q.H.
Theories of dramatic presentation through analysis of selected historical developments. Purposes and techniques of theatrical direction as they relate to script analysis, production style, pictorial composition, rhythmic evolution, emphatic responses.

Prof. Blackman

Winter Qtr.

29.161 Problems in Direction

4 Q.H.

Experimentation in theory related to the staging of classical and modern drama. Analysis of plays for actual production; casting, rehearsals, character interpretations. Each student is responsible for the production of a one-act play.

Prof. Blackman

Spring Qtr.

29.163 Play Production

4 Q.H.

The basics of play production for recreation and education leaders in schools, camps, or settlement houses. Both formal and informal dramatics activities are explored, along with the problems involved in preparing the creative, performing, design, and technical aspects of a production.

Mr. Bailey

Fall and Winter Qtrs.

29.164, 29.165, 29.166, 29.167 Practicum in Play Production

1 Q.H.

Laboratory practice in technical theatre: scene building and painting, and the performing of backstage functions. To be repeated for credit up to four credits.

Prof. Bailey

All Quarters

29.170 Scenic Production

4 Q.H.

Principles which underlie the coordination and execution of scenery for the stage; examination of different kinds of scenery, tools, equipment, construction materials, and techniques; handling of scenery and basic scene painting. Laboratory work: constructing and painting scenery for University productions.

Mr. Bailey

Winter and Spring Qtrs.

29.171 Design and Lighting

(Prereq. 29.170) 4 Q.H.

The basic principles of design and lighting for the stage; historical analysis of composition and design from classical to modern periods; execution of designs for productions.

Mr. Bailey

Not offered 1973-74

29.172 Scenic Design for the Stage

(Prereq. 29.17) 4 Q.H.

Practical problems of scene design and methods of approach. Classwork and projects in analysis of a script in terms of visual requirements; elements of design and their application to scenery; methods of inspiration; presentation of ideas including sketches, renderings, models, working drawings, and elevations; basic scene painting and evaluation of designs. Laboratory work includes designing and executing scenery for University productions.

Mr. Bailey

Not offered 1973-74

29.173 Lighting Design for the Stage

(Prereq. 29.170) 4 Q.H.

Basic principles and practices of stage lighting, including the qualities and functions of light, lighting instruments and controls, basic electricity, color in light, and analysis of the script in terms of light requirements. Students develop light plots and schedules for various kinds of stage productions, and frequently design University productions. Class work includes laboratory work on lighting crews for University productions.

Mr. Bailey

Spring Qtr.

29.174 Scene Painting

4 Q.H.

The history of scene painting and ornament from classical to contemporary times. Studio organization, color, color theory, equipment, tools, materials, and costs involved with painting stage scenery. Projects and exercises in the use of different media, matching colors, painting of textures, light and shade, and the use of stencils and physical textures. Laboratory sessions include painting stage scenery for University productions.

Mr. Bailey

Spring Qtr.

29.175 Costuming for the Stage

4 Q.H.

The theoretical and practical aspects of costuming are covered through a combined lecture/laboratory format. Basic design concepts, techniques of rendering costume plates, pattern drafting, draping, fabric usage, and special effects. Particular emphasis is given to problems of costuming for high school and college theatres.

Fall Qtr.

29.176 Historic Costume and Design

(Prereq. 29.175) 4 Q.H.

A survey of historic costume and civil dress through the ages of Western man. Its adaptation and relevance to the problems involved in designing for high school and college stages are the foundation for this area of study. Emphasis is on the use of research sources for design assignments within various periods.

Spring Qtr.

29.180 Playwriting

4 Q.H.

The principles and practices of modern dramatic composition: characterization, plot, plot structure, dialogue, and other dramaturgical elements as seen in the one-act play. The writing of brief scenes; the dramatic; and the one-act play.

Prof. Phillips

Fall and Winter Qtrs.

29.185 Children's Theatre

4 Q.H.

Theories and methods of relating creative techniques to children's programs in schools, churches, and recreational facilities. Analysis of literature in preparation for production of children's plays.

Prof. Blackman

Spring and Summer Qtrs.

29.186 Educational Theatre

4 Q.H.

Drama and drama activities in community, social, health, and educational agencies. Organizing and directing young people's theatre programs.

Not offered 1973-74

29.200 History of the Theatre

4 Q.H.

Development of the theatre and the drama of Greece and Rome, medieval Europe, Elizabethan and Restoration England, and 17th-century France; an examination of playwriting, acting styles, scene design, theatre architecture, and the relationship among these elements.

Prof. Phillips

Fall and Winter Qtrs.

29.201 History of the Theatre

4 Q.H.

Development of the European theatre of the 18th, 19th, and early 20th centuries; growth and development of the proscenium theatre; the emphasis upon naturalistic and realistic presentation; theatre innovations.

Prof. Phillips

Spring and Summer Qtrs.

29.202 The Classic Theatre of Greece and Rome

4 Q.H.

The beginnings of theatre and its growth as a potent institution and art form. A detailed study of the interrelation of the dramatic form, theatre structure, and works of major playwrights.

Not offered 1973-74

29.205 The Restoration Theatre

4 Q.H.

The philosophical, social, historical, and critical influences upon the Restoration theatre and its dramatists.

Not offered 1973-74

29.210 The American Theatre

4 Q.H.

The American theatre from the Revolutionary War to the present.

Prof. Phillips

Fall and Winter Qtrs.

29.211 The Theatre of Williams, Miller, and Albee

4 Q.H.

An intensive study of the works of three major post-World War II American playwrights.

Prof. Phillips

Spring and Summer Qtrs.

29.230 Contemporary Theatre

4 Q.H.

The traditional and contemporary forces that shape the trends in present-day theatre. Emphasis upon the works and contributions of Wilder, Pirandello, Brecht, Bolt, Ghelderode, Ionesco, Osborne, Pinter, the major absurdists, and the present experimentalists.

Prof. Kaplan

Fall and Winter Qtrs.

29.231 The Theatre of the Absurd

4 Q.H.

The Theatre of the Absurd as a mirror of present existentialist thinking and its effects upon the history of Western drama.

Prof. Kaplan

Spring and Summer Qtrs.

29.240 Drama Criticism

4 Q.H.

An examination of both the major historical statements of drama theory and contemporary drama criticism as evidenced in journalistic play reviews. Students prepare reviews of local productions.

Prof. Phillips

Spring Qtr.

29.290 Directed Study

4 Q.H.

Staff

All Quarters

English

Prerequisite for all English courses is Freshman English (30.113 and 30.114) or equivalent.

30.104 Advanced Expository Writing

4 Q.H.

A practical course in writing direct prose with clarity and precision. Includes various methods of development; diction, style, tone; the article, review, and other forms.

Prof. Norvish

All Quarters

30.108 Creative Writing: Poetry

4 Q.H.

Practice in various forms and strategies of verse, with specific assignments in different modes; discussion and criticism of student work and selected texts.

Mr. DeRoche

All Quarters

30.109 Creative Writing: Fiction

4 Q.H.

Conducted as an introduction to fiction writing, with emphasis on the short story. The course is open to students in all disciplines, whether or not they have previously written fiction. The minimum requirements are 10,000 words of original work divided into three assignments. Reading and discussion of manuscripts written by the students occupy the bulk of class time.

Mr. Sandberg

All Quarters

30.110 Literary Analysis: Poetry

4 Q.H.

Close reading of selected poems, mastery of critical terms, practice in varied critical approaches to poetry. A number of critical papers are written. Required of English majors.

Staff

Fall and Winter Qtrs.

30.111 Literary Analysis: Fiction

4 Q.H.

A formal study of selected novels and short stories, mastery of critical terms, practice in varied critical approaches. A number of critical papers required.

Staff

Spring and Summer Qtrs.

30.112 Literary Analysis: Drama

4 Q.H.

A formal study of selected plays, mastery of critical terms, practice in varied critical approaches. A number of critical papers required.

Staff

Spring and Summer Qtrs.

30.113 Freshman Writing

4 Q.H.

Important principles of logic and rhetoric applied to exposition and argumentation writing; review of sentence structure, punctuation, and paragraphing; extensive reading and analysis of the essay form; theme assignments.

Staff

All Quarters

30.114 Introduction to Literature

(Prereq. 30.113) 4 Q.H.

An introduction to literary forms: poetry, prose fiction, and drama. Intensive reading various forms and discussion of different approaches to literature.

Staff

All Quarters

30.115 Great Themes in Literature

(Prereq. 30.114) 4 Q.H.

Content determined by instructor, who chooses a theme and a number of books from different periods to illustrate it.

Staff

Winter and Spring Qtrs.

30.120 Introduction to Linguistics

4 Q.H.

Theories of the nature and origin of language; review of historical and comparative linguistics; differences between written and spoken language, prescriptive and descriptive grammars; structural and generative-transformational phonology, morphology, and syntax; distinctive features; current trends; investigation into dialectology and linguistic field work; methodology regarding unwritten languages.

Fall and Winter Qtrs.

30.121 Foundations of the English Language

4 Q.H.

Development of modern English from pre-Anglo Saxon beginnings; effects of Roman, Scandinavian, and Norman invasions; dialect geography; evolutionary changes, word formation and borrowing; English as an international language; origins of writing and problems of spelling.

Spring and Summer Qtrs.

30.124 Traditional Grammar

4 Q.H.

A reappraisal of traditional grammar in the light of recent advances in grammatical theory; the practical application of such grammar in both studying and teaching English as a medium of expression; supplementary readings by way of transition to the newer grammars.

Fall and Winter Qtrs.

30.125 Grammars of English

4 Q.H.

An attempt to understand and apply the newer grammar, especially the structural.

Spring and Summer Qtrs.

30.126 Transformational Grammar

4 Q.H.

The development of the theories of generative-transformational grammars by Noam Chomsky and others, and the development of the skill to construct and operate specific generative-transformational grammars.

Spring and Summer Qtrs.

30.130 Introduction to Semantics

4 Q.H.

The relation between language and behavior, levels of abstraction in communication, habits of evaluation of linguistic phenomena, and the modification of such habits in the direction of human understanding and survival.

Fall and Winter Qtrs.

30.140 The Novel of Violence

4 Q.H.

The hard-boiled tradition in American literature. Works by Fenimore Cooper, Owen Wister, Jack Scheafer, Ernest Hemingway, Dashiell Hammett, Raymond Chandler, and others are discussed in terms of their response to the conflict between the ideal of community and the ideal of individualism. Critical theories of D.H. Lawrence, R.W.B. Lewis, Leslie Fiedler, Leo Marx, A.N. Kaul, and others are considered.

Prof. Parker

Fall and Winter Qtrs.

30.141 Science Fiction

4 Q.H.

The myths and rhetorical (scientific and pseudo-scientific) strategies of science fiction from Mary Shelley's *Frankenstein* through current authors such as Vonnegut, Bradbury, Heinlein, Clarke.

Prof. Goshgarian

All Quarters

30.142 The Psychological Novel

4 Q.H.

Concentration on 20th-century novels whose themes stress individual behavior and motivation, and whose form and style often try to imitate human mental and emotional processes. Authors studied include: Kafka, Dostoevski, Faulkner, Conrad, and Lawrence.

Prof. Sullivan

Spring and Summer Qtrs.

30.143 Autobiography and Fiction

4 Q.H.

Autobiography as the product of creative and therefore fictional impulses is studied by examining the way autobiographers shape the facts of their lives into patterns reflecting attitudes toward self. This study is extended to novels narrated by fictional self-historians.

Prof. Roemer

Fall and Winter Qtrs.

30.144 Literature of the Absurd

4 Q.H.

Outstanding novels of the 20th century, with emphasis on literary trends and implied social outlook.

Staff

Fall and Winter Qtrs.

30.151 The Modern Novel

4 Q.H.

Outstanding novels of the 20th century, with emphasis on literary trends and implied social outlook.

Staff

Fall and Winter Qtrs.

30.152 Modern Drama

4 Q.H.

Native and European drama since 1880, with emphasis on the relationship between drama and society in the 20th century.

Staff

Spring and Summer Qtrs.

30.154 The Modern Short Story

4 Q.H.

Selected British and American writers of the short story, with close attention to contemporary practitioners (Salinger, Malamud, Roth) as well as to major figures (Joyce, Lawrence, Faulkner).

Prof. Griffin

Fall and Winter Qtrs.

30.160 New Topics in Literature

4 Q.H.

This experimental course deals with a different topic each fall/winter and spring/summer, providing the opportunity for students to study unusual or nontraditional aspects of literature. Sample possibilities: Gothic and Horror Fiction, Victorian Children's Literature, and the Literature of Utopia. Topic will be preannounced.

Fall and Winter Qtrs.

30.161 New Topics in Literature

4 Q.H.

Not a continuation of 30.160, but the same course with a different topic.

Spring and Summer Qtrs.

30.162 Major Figure

4 Q.H.

Devoted entirely to the work of a single writer, with a different one each fall/winter and spring/summer: i.e., Wordsworth, Joyce, Tolstoy, Dickens. Subject will be preannounced.

Fall and Winter Qtrs.

30.163 Major Figure

4 Q.H.

Same as 30.162, but with a different writer.

Spring and Summer Qtrs.

30.170 Survey of English Literature

4 Q.H.

English literature to 1800.

Staff

Fall and Winter Qtrs.

30.171 Survey of English Literature

4 Q.H.

English literature from 1800 to the present.

Staff

Spring and Summer Qtrs.

30.180 Survey of American Literature

4 Q.H.

American literature to 1860.

Staff

Fall and Winter Qtrs.

30.181 Survey of American Literature

4 Q.H.

American literature from 1860 to the present.

Spring and Summer Qtrs.

30.182 Major American Novels

4 Q.H.

An intensive analysis of the themes, forms, and techniques of American novelists of the 19th and early 20th centuries. Critical papers are required.

Prof. Trachtenberg

Fall and Winter Qtrs.

30.183 Major American Novels

4 Q.H.

An intensive analysis of the themes, forms, and techniques of modern American novelists. Critical papers are required.

Prof. Trachtenberg

Spring and Summer Qtrs.

30.186 Early American Literature

4 Q.H.

The development of early American culture of the colonial and federal periods. Letters, narratives, verse, polemics, the Federalist Papers, etc.

Prof. Lesser

Fall and Winter Qtrs.

30.187 New England Renaissance

4 Q.H.

An intensive survey of transcendentalism, and relevant works of Melville and Hawthorne.

Fall and Winter Qtrs.

30.188 American Romanticism

4 Q.H.

An intensive survey of Poe, Melville, Whitman, Dickinson, and others.

Spring and Summer Qtrs.

30.189 American Realism

4 Q.H.

American literature from the Civil War to Norris, Crane, Twain, and James.

Prof. Nagel

Fall and Winter Qtrs.

30.190 Modern American Literature

4 Q.H.

Fiction, drama, and poetry from the turn of the century to the mid-forties.

Prof. Nagel

Spring and Summer Qtrs.

30.200 Western World Literature I

4 Q.H.

The major literary forms of classical Greece, with special attention to the epic, drama, and dialogue. In-depth study of selected works of Homer, Plato, Aristotle, and the dramatists.

Fall and Winter Qtrs.

30.201 Western World Literature II

4 Q.H.

The major literary forms of the Roman Empire, with special attention to the epic, drama, and oration. Emphasis on the works of Virgil, Horace, Ovid, and Cicero.

Spring and Summer Qtrs.

30.202 Western World Literature III

4 Q.H.

The major literary forms in the European tradition from the medieval period to the 19th century. Selected readings from the writings of Dante, Calderon, Milton, Racine, Corneille, Johnson, and Goethe.

Fall and Winter Qtrs.

30.203 Western World Literature IV

4 Q.H.

The major literary forms of the 20th century. Readings from major American and European figures are surveyed, with special emphasis on Kafka, Camus, Sartre, Ionesco, Beckett, and Albee.

Prof. Sands

Spring and Summer Qtrs.

30.204 Practical Writing

4 Q.H.

Designed for people who wish to write professionally, but who are not primarily interested in writing fiction or poetry. Discussions on how to write and edit essays, advertisements, feature stories, articles, film strips, news stories, news releases, technical manuals, house organs, industrial films, direct mail, radio commercials. Guest lecturers from various professions

appear from time to time.
Prof. Parker

All Quarters

30.209 Advanced Fiction Writing (Prereq. 30.109 or permission of instructor) 4 Q.H.
Reading and discussion of student manuscripts (longer and more complex than those developed in 30.109, Creative Writing: Fiction).
Mr. McHale

All Quarters

30.210 Major British Novelists 4 Q.H.
The 18th-century English novel, with special attention to Defoe, Fielding, Smollett, Sterne, the Gothic novelists, and Austen; the development of the English novel and the characteristic quality of 18th-century fiction.

Fall and Winter Qtrs.

30.211 Major British Novelists 4 Q.H.
The 19th-century English novel, with special attention to the Brontes, Thackeray, Trollope, Eliot, Meredith, Gissing, and Hardy; the Victorian frame of mind as seen in the novels.
Spring and Summer Qtrs.

30.218 Medieval English Literature 4 Q.H.
Major works in Middle English: *Sir Gawain*, *Piers Plowman*, and *Pearl*.
Profs. Blanch and Kroll

Fall and Winter Qtrs.

30.219 Major British Dramatists: Restoration and 18th Century 4 Q.H.
Major dramatists from 1660—1800. Among those studied are: Etherege, Wycherley, Congreve, Dryden, Addison, Goldsmith, and Sheridan.
Spring and Summer Qtrs.

30.220 Major British Dramatists: Elizabethan and Jacobean 4 Q.H.
The origin, theme, form, technique, and poetry of such dramatists as Kyd, Webster, Tourneur, Fletcher, and Beaumont, with particular emphasis on the works of Marlowe, Jonson, and Ford.

Fall and Winter Qtrs.

30.221 Major British Dramatists: 19th Century and Modern 4 Q.H.
British drama with particular emphasis on the poetic and experimental in the works of Shaw, Synge, Yeats, O'Casey, Eliot, Behan, Pinter and Beckett.
Prof. Bernstein

Fall and Winter Qtrs.

30.222 Chaucer 4 Q.H.
Selected *Canterbury Tales*.
Profs. Blanch and Kroll

Fall and Winter Qtrs.

30.223 Chaucer 4 Q.H.
Selected *Canterbury Tales* and Chaucer's early poems.
Profs. Blanch and Kroll

Spring and Summer Qtrs.

30.224 Spenser 4 Q.H.
Selected early poems and portions of the *Faerie Queene*.
Prof. Blessington

Spring and Summer Qtrs.

30.225 Milton 4 Q.H.
Concentration on Milton's *Paradise Lost*, with supplementary readings in his minor poems and prose.
Prof. Blessington

Fall and Winter Qtrs.

30.230 Seventeenth-Century English Literature 4 Q.H.
Major writers of the first half of the century, with special emphasis on Bacon, Jonson, and the metaphysical poets Donne and Herbert; the effect of science on the literature and the thinking of the times.
Prof. Howes

Fall and Winter Qtrs.

30.231 Seventeenth-Century English Literature 4 Q.H.
Major writers of the second half of the century, with emphasis upon Dryden and Milton. Satire

as a literary genre and its relationship to the times.

Spring and Summer Qtrs.

30.236 Eighteenth-Century English Literature

4 Q.H.

Significant dramatic works of the period and the writings of Pope and Swift.

Prof. Weitzman

Fall and Winter Qtrs.

30.237 Eighteenth-Century English Literature

4 Q.H.

Writings of Dr. Johnson, Boswell, and Blake.

Prof. Weitzman

Spring and Summer Qtrs.

30.240 Nineteenth-Century English Literature: The Romantics I

4 Q.H.

The poetry of Blake, Wordsworth, Coleridge, and related critical material; the relationship between the poetry and the time.

Prof. Roemer

Fall and Winter Qtrs.

30.241 Early Victorian Literature, 1830-1870

4 Q.H.

Survey of the major literary forms of the period. Readings in Tennyson, Browning, Arnold, Carlyle, Mill, Ruskin, Dickens.

Prof. Sussman

Fall and Winter Qtrs.

30.242 Nineteenth Century English Literature: The Romantics II

4 Q.H.

The poetry of Byron, Shelley, Keats, and related critical material; the essays of Lamb, Hazlitt, and DeQuincey.

Prof. Roemer

Spring and Summer Qtrs.

30.243 Later Victorian Literature, 1870-1900

4 Q.H.

Emphasis on the movement toward "modernism" in the later 19th century. Readings in Pater, G.M. Hopkins, Wilde, Hardy, and the early work of G.B. Shaw and Conrad.

Prof. Sussman

Spring and Summer Qtrs.

30.246 Twentieth-Century Literature

4 Q.H.

The development of the British Novel from 1900 to 1920. Writers studied are: Conrad, Galsworthy, Bennet, Wells Forster, Joyce, Lawrence, Ford.

Prof. Roby

Fall and Winter Qtrs.

30.247 Twentieth-Century Literature

4 Q.H.

The development of the British novel from 1920 to the present. Writers to be studied are: Woolf, Orwell, Beckett, Cary, Amis, Snow, Murdoch, Fowles.

Prof. Roby

Spring and Winter Qtrs.

30.248 Sixteenth Century-English Literature

4 Q.H.

Fall and Winter Qtrs.

30.250 Shakespeare

4 Q.H.

A chronological approach to Shakespeare's plays, beginning with *Romeo and Juliet* and ending with *Julius Caesar*. Emphasis on diction, dramatic structure, and psychology.

Profs. Howes and Westlund

Fall and Winter Qtrs.

30.251 Shakespeare

4 Q.H.

Shakespeare's middle and last phases (*Hamlet* to *The Tempest*); selected plays.

Profs. Howes and Westlund

Spring and Summer Qtrs.

30.260 The Bible

4 Q.H.

A close study and textual analysis of selected books of the Bible. The assigned texts are especially considered in their historical and literary aspects.

Prof. Blois

Spring and Summer Qtrs.

30.261 Mythology

4 Q.H.

The mythological patterning of human experience; the philological and anthropological approaches to specific myths, especially those of the Greeks; and the themes of sacrifice and change.

Prof. Blois

Fall and Winter Qtrs.

30.262 Literary Criticism: Approaches to Literature

4 Q.H.

Exercises and readings in ancient and modern theories of literature. Included are: Marxist, Freudian, Jungian and New Critical theories, as well as selections from Plato, Aristotle and the Romantics.

Prof. Nelson

Fall and Winter Qtrs.

30.263 Modern Poetry I

4 Q.H.

A study of the origin and development of modern poetry. Poets studied are: Hardy, Yeats, Robinson, Frost, Stevens, Moore, Eliot, and Pound. Recommended for students who have already had an introductory course in poetry.

Prof. Morse

Fall and Winter Qtrs.

30.264 Modern Poetry II

4 Q.H.

A continuation of 30.263, with emphasis on the later work of Eliot and Pound, William Carlos Williams, the Objectivists, the Fugitives (Ransom, Tate, Warren), Auden, Lowell, Roethke, Dylan Thomas, and the "new poets" from 1945 to 1960.

Prof. Morse

Spring and Summer Qtrs.

30.266 Literary Criticism: Myth and Archetypal

4 Q.H.

Exercises and readings in selected schools of myth and archetypal literary criticism.

Prof. Nelson

Spring and Summer Qtrs.

30.267 Afro-American Literature

4 Q.H.

A survey of the development and range of black American writers, emphasizing poetry and prose from the post-Civil War period to the present.

Mr. Hurreh

Fall and Winter Qtrs.

30.268 Afro-American Literature

4 Q.H.

Continuation of 30.267.

Mr. Hurreh

Spring and Summer Qtrs.

30.269 The Black Novel

4 Q.H.

A study of the black novel—its theme, structure, and style—and its historical, cultural, and literary importance.

Fall and Winter Qtrs.

30.270, 30.271 Junior Seminar

4 Q.H.

Fall, Winter, and Spring Qtrs.

30.272 Studies in English Literature

4 Q.H.

A seminar course on a special topic which is announced in advance. Examples: The Pre-Raphaelites, Literature and Psychology, and John Donne.

Fall and Winter Qtrs.

30.273 Studies in English Literature

4 Q.H.

Continuation of 30.272.

Spring and Summer Qtrs.

30.274 Studies in American Literature I

4 Q.H.

A seminar course on a special topic announced in advance. Examples: Puritanism, Early Drama, and The Genteel Tradition.

Fall and Winter Qtrs.

30.275 Studies in American Literature II

4 Q.H.

Continuation of 30.274.

Spring and Summer Qtrs.

30.276 African Literature

4 Q.H.

Mr. Hurreh

Fall and Winter Qtrs.

30.280, 30.281 Senior Seminar

(each) 4 Q.H.

Fall Winter, and Spring Qtrs.

30.290, 30.291 Directed Study

(each) 4 Q.H.

All Quarters

30.295, 30.296 Junior Honors

(each) 4 Q.H.

All Quarters

30.297, 30.298 Senior Honors

(each) 4 Q.H.

All Quarters

French

Prerequisites listed for Modern Languages are based on current course numbers at Northeastern. Equivalent course work done elsewhere will be considered acceptable to satisfy these prerequisites.

31.201 Elementary French I

4 Q.H.

Essentials of grammar; practice in speaking and reading; progressive acquisition of basic language skills.

Prof. Williams and Staff

Fall and Winter Qtrs.

31.202 Elementary French II

(Prereq. 31.201) 4 Q.H.

Continuation of grammar study and basic language skills; reading of French of increasing difficulty; practice in conversation.

Prof. Williams and Staff

31.203 Intermediate French I

(Prereq. 31.202) 4 Q.H.

Continuation of grammar, oral practice, and the reading of selected texts.

Prof. Stephan and Staff

31.204 Intermediate French II

(Prereq. 31.203) 4 Q.H.

Prof. Stephan and Staff

31.205 Reading French in the Arts and Sciences

(Prereq. 31.202 or equiv.) 4 Q.H.

Designed for those students who wish to develop their reading skills, without regard to other aspects of the language such as speaking or writing. To this end, the grammar necessary for reading is stressed, together with vocabulary building. Scientific and nonscientific texts are read. This course is also very helpful for students, graduate and undergraduate, who need to pass a reading examination to fulfill specific degree requirements. However, it should be made clear that this course is not a substitute for 31.203 and 31.204 (Intermediate French).

Mr. Robinson

Fall and Winter Qtrs.

31.217 French Literature in Translation

4 Q.H.

An elective course for all students, offering a study of some of the most significant works of French literature in translation. The topic will vary from year to year. Language majors would receive major credit for this course *only* by making special arrangements with the instructor for extra work to be done.

Mr. Robinson

Spring and Summer Qtrs.

31.219 Cherchez la Femme! Women in French Literature of the 18th and 19th Centuries

4 Q.H.

A one-quarter course conducted in English of French literature in translation. An opportunity to see how woman is viewed by some of the great French novelists of the 18th and 19th centuries. The class meetings alternate between lectures and group discussions of literary, psychological, and sociological issues raised by the texts. A reading knowledge of French is desirable, but *not* essential.

Mrs. Gill

Spring and Summer Qtrs.

31.227 French Composition and Conversation I

(Prereq. 31.204) 4 Q.H.

Aiming at perfect speaking and writing ability: the basis of work is analysis of the language, oral and written reports and general discussions. Conducted in French.

Prof. Cedrone and Staff

Fall and Winter Qtrs.

- 31.228 French Composition and Conversation II** (Prereq. 31.227) 4 Q.H.
Continuation of 31.227, with stress on individual work, free discussions, and compositions.
Conducted in French.
Prof. Cedrone and Staff Spring and Summer Qtrs.
- 31.231 Masterpieces of French Literature I** (Prereq. 31.204) 4 Q.H.
Introductory course in French literature. Selected works from the Middle Ages to the 18th century.
Prof. Gilman and Staff Fall and Winter Qtrs.
- 31.232 Masterpieces of French Literature II** (Prereq. 31.204 or equiv.) 4 Q.H.
Introductory course in French literature. Selected works from the 19th and 20th centuries.
Prof. Gilman and Staff Spring and Summer Qtrs.
- 31.233 Applied French Linguistics** (Prereq. 30.120) 4 Q.H.
For teachers or prospective teachers of French: phonemes and allophones, breath groups and sentences, intonation patterns, comparison between oral and written French.
Prof. Williams
- 31.243 French Classicism** (Prereq. 31.232 or equiv.) 4 Q.H.
Intellectual currents and other nondramatic literature of the 17th century.
Prof. Williams Fall and Winter Qtrs.
- 31.244 French Classicism** (Prereq. 31.232 or equiv.) 4 Q.H.
Dramatic literature of the 17th century. Plays of Corneille, Moliere, and Racine.
Prof. Williams Spring and Summer Qtrs.
- 31.245 French Literature of the 18th Century** (Prereq. 31.232, equiv.) 4 Q.H.
The progress of the philosophical spirit and rationalistic thinking as reflected in the works of Fontenelle, Bayle, Montesquieu, Voltaire, and others.
Prof. Fabrizi Offered 1974-75
- 31.246 French Literature of the 18th Century** (Prereq. 31.232 or equiv.) 4 Q.H.
The achievements of the spirit of enlightenment and the awakening of the romantic sensibility, as seen in such authors as Diderot, Rousseau, St. Pierre, and Beaumarchais.
Conducted in French.
Prof. Fabrizi Offered 1974-75
- 31.247 French Literature of the 19th Century** (Prereq. 31.232 or equiv.) 4 Q.H.
Romantic poetry and drama; the realist novel.
Prof. Stephan Offered 1974-75
- 31.248 French Literature of the 19th Century** (Prereq. 31.232 or equiv.) 4 Q.H.
Flaubert; Parnassian and Symbolist poetry.
Prof. Stephan Offered 1974-75
- 31.249 French Literature of the 20th Century** (Prereq. 31.232 or equiv.) 4 Q.H.
Narrative and dramatic prose writers prior to World War II, including Proust, Claudel, Gide, and Mauriac.
Prof. Fabrizi Fall and Winter Qtrs.
- 31.250 French Literature of the 20th Century** (Prereq. 31.232 or equiv.) 4 Q.H.
The prose literature of present-day France as illustrated by the works of Sartre, Camus, Ionesco, and others.
Prof. Fabrizi Spring and Summer Qtrs.
- 31.291, 31.292, 31.293, 31.294 Directed Study** 4 Q.H. (each)
Staff All Quarters
- 31.295, 31.296, 31.297, 31.298 Honors Program** 4 Q.H. (each)
Staff All Quarters

Spanish

Prerequisites listed for Modern Languages are based on current course numbers at Northeastern. Equivalent course work done elsewhere will be considered acceptable to satisfy these prerequisites.

32.301 Elementary Spanish I

4 Q.H.

Essentials of grammar; practice in pronunciation; progressive acquisition of a basic vocabulary and idiomatic expressions.

Prof. Kitchin and Staff

Fall and Winter Qtrs.

32.202 Elementary Spanish II

(Prereq. 32.201) 4 Q.H.

Continuation of grammar study. Oral and written exercises; reading of basic Spanish prose.

Prof. Kitchin

32.203 Intermediate Spanish I

(Prereq. 32.202) 4 Q.H.

Intensive grammar review. Reading of modern prose and poetry, with occasional oral or written translation. Basic elements of composition and conversation practice based on assigned readings.

Prof. Modee and Staff

32.204 Intermediate Spanish II

(Prereq. 32.203 or equiv.) 4 Q.H.

Intensive reading of modern Spanish prose and poetry of moderate difficulty. Further practice in composition and continued conversation practice based on assigned readings.

Prof. Modee and Staff

32.209 Conversational Spanish I

(Prereq. 32.204 or equiv.; open to non-majors only) 4 Q.H.

Emphasis on developing the student's ability to speak Spanish and to comprehend it. Ordinarily, the entering student will have completed 32.204, or the equivalent, but particularly able students may be accepted after having completed only 32.202. In this case, the sequence 32.209-210 may be used to satisfy the language requirement.

Mrs. Lisis

Fall and Winter Qtrs.

32.210 Conversational Spanish II

(Prereq. 32.209 or equiv.) 4 Q.H.

Continuation of 32.209, with continuing emphasis on the development of oral facility in Spanish.

Mrs. Lisis

Spring and Summer Qtrs.

32.211 Advanced Conversational Spanish

(Prereq. 32.210 or equiv; open to non-majors only) 4 Q.H.

Continuation and more intensive practice of work begun in 32.210.

Mrs. Lisis

32.213 Readings in Spanish Literature

(Prereq. 32.204 or equiv.; open to non-majors only) 4 Q.H.

The opportunity to read some of the most interesting works of Spanish literature without the intensive survey required in the Masterpieces course. Conducted in English.

Mrs. Jolliff

Fall and Winter Qtrs.

32.214 Readings in Latin American Literature

(Prereq. 32.204 or equiv.) 4 Q.H.

Companion course to 32.213. Emphasis upon the literature of Latin America. Conducted in English.

Mrs. Jolliff

Spring and Summer Qtrs.

32.215 Backgrounds in Hispanic Culture I

4 Q.H.

Open to all interested students. A reading knowledge of Spanish is helpful, but *not* essential. This course provides a multimedia survey of Spanish culture: slides, concerts, films, field trips, and guest lecturers utilized. Language majors should consult with the instructor concerning possible major credit. Conducted in English.

Prof. Kitchin

Fall and Winter Qtrs.

32.216 Backgrounds in Hispanic Culture II (Prereq. 32.204 or equiv.) 4 Q.H.
Reading knowledge of Spanish required. This course begins with a survey of the three most important pre-Colombian cultures (Incas, Mayas, and Aztecs). Subsequently, the focus is on intellectual history of Latin America. Readings include *Carta de Jamaica* and *Discurso ante el Congreso de Angostura*.

Miss Lopez

Spring and Summer Qtrs.

32.227 Spanish Composition and Conversation I (Prereq. 32.204 or equiv.) 4 Q.H.
Practice in writing and speaking Spanish, including written and oral resumes, prepared speeches and themes, impromptu speaking and writing. A review of the more subtle problems of grammar.

Prof. Jaramillo and Staff

Fall and Winter Qtrs.

32.228 Spanish Composition and Conversation II (Prereq. 32.227 or equiv.) 4 Q.H.
Further practice in oral and written Spanish; continued study of problems of advanced Spanish grammar.

Prof. Jaramillo and Staff

Spring and Summer Qtrs.

32.229 Advanced Spanish Proficiency I (Prereq. consent of instructor) 4 Q.H.
Designed for those preparing to enter the teaching profession, as well as qualified advanced students. Advanced elements of Spanish syntax, with emphasis upon achieving superior speaking, reading, and writing skills.

Prof. Jaramillo

Offered 1974-75

32.230 Advanced Spanish Proficiency II (Prereq. 32.229 and consent of instructor) 4 Q.H.
Continuation of aims and goals of 32.229.

Prof. Jaramillo

Offered 1974-75

32.231 Masterpieces of Spanish Literature I (Prereq. 32.204 or equiv.); 4 Q.H.
Introductory course in Spanish literature. Selected works from the Middle Ages to the *Siglo de Oro*.

Mrs. Wegmann

Fall and Winter Qtrs.

32.232 Masterpieces of Spanish Literature II (Prereq. 32.204 or equiv.) 4 Q.H.
Introductory course in Spanish literature. Selected works from the 19th and 20th centuries.

Mrs. Wegmann

Spring and Summer Qtrs.

32.239 Spanish Literature of the Middle Ages (Prereq. 32.232 or equiv.) 4 Q.H.
Selections from the major works of the Middle Ages, from the *Poema del Cid* to the *Libro de buen amor*.

Prof. Modee

Offered 1974-75

32.241 Spanish Literature of the 15th and 16th Centuries (Prereq. 32.232 or equiv.) 4 Q.H.
Selections from the major works of the 15th and 16th centuries, from *La Celestina* to mysticism.

Prof. Modee

Offered 1974-75

32.243 Spanish Literature of the Golden Age (Prereq. 32.232 or equiv.) 4 Q.H.
Cervantes; selections from the *Entremeses*, the *Novelas ejemplares*, and *Don Quijote*, with emphasis on the latter as Spain's greatest literary masterpiece.

Prof. Kitchin

Fall and Winter Qtrs.

32.244 Spanish Literature of the Golden Age (Prereq. 32.232 or equiv.) 4 Q.H.
Readings from the *comedias* of Lope de Vega, Tirso de Molina, Galderon, and Ruiz de Alarcon; also prose and poetry selections from Gongora and Quevedo.

Prof. Kitchin

Spring and Summer Qtrs.

32.247 Spanish Literature of the 19th Century (Prereq. 32.232 or equiv.) 4 Q.H.
Readings in the prose, poetry, and drama of the romantic period, including selections from el Duque de Rivas, Larra, Espronceda, Zorrilla, and Becquer.

Prof. Modee

Fall and Winter Qtrs.

- 32.248 Spanish Literature of the 19th Century** (Prereq. 32.232 or equiv.) 4 Q.H.
A study of some of the major novelists of the second half of the 19th century.
Prof. Modee Spring and Summer Qtrs.
- 32.249 Spanish Literature of the 20th Century** (Prereq. 32.232 or equiv.) 4 Q.H.
Selections from the writings of the Generation of '98: Unamuno, Valle-Inclan, Pio Baroja, Benavente, Azorin, and the Machado brothers.
Prof. Jaramillo Offered 1974-75
- 32.250 Spanish Literature of the 20th Century** (Prereq. 32.232 or equiv.) 4 Q.H.
Prose and poetry of modern writers, such as Ortega y Gasset, Perez de Ayala, Garcia Lorca, Juan Ramon Jimenez, Gironella, and Jose Cela.
Prof. Jaramillo Offered 1974-75
- 32.251 Latin American Literature** (Prereq. 32.232 or equiv.) 4 Q.H.
Early Latin American literature; the literature of the colonial period and the early 19th century based primarily on selections from an anthology.
Prof. Jaramillo Fall and Winter Qtrs.
- 32.252 Latin American Literature** (Prereq. 32.232, equiv.) 4 Q.H.
Modern Latin American literature; readings from 19th- and 20th-century prose and poetry.
Prof. Jaramillo Spring and Summer Qtrs.
- 32.291, 32.292, 32.293, 32.294 Directed Study** 4 Q.H. (each)
Staff All Quarters
- 32.295, 32.296, 32.297, 32.298 Honors Program** 4 Q.H. (each)
Staff All Quarters

German

Prerequisites listed for Modern Languages are based on current course numbers at Northeastern. Equivalent course work done elsewhere will be considered acceptable to satisfy these prerequisites.

- 33.201 Elementary German I** 4 Q.H.
Essentials of grammar, practice in pronunciation, acquisition of a basic vocabulary, idiomatic expressions.
Prof. Cooperstein and Staff Fall and Winter Qtrs.
- 33.202 Elementary German II** (Prereq. 33.201) 4 Q.H.
More difficult points of grammar; reading of simple German prose, with oral and written exercises.
Prof. Cooperstein and Staff
- 33.203 Intermediate German I** (Pereq. 33.202) 4 Q. H.
Reading practice, using texts of average difficulty; review of grammar; written and oral exercises.
Prof. Aluf and Staff
- 33.204 Intermediate German II** (Prereq. 33.203) 4 Q.H.
Readings from modern German prose; practice in speaking and writing.
Prof. Aluf and Staff
- 33.205 Reading German in the Arts and Sciences** 4 Q.H.
A one-quarter course designed to give students sufficient knowledge of German grammar and sentence structure to enable them to translate critical and scientific texts with the aid of a dictionary. Students do not learn to speak or write German; instead, class time is devoted to the acquisition of the grammar necessary for translation, as well as to practice in translating texts from various scientific and humanistic fields. May *not* be used to fulfill a language requirement.
Prof. Andrea Fall and Winter Qtrs.

33.207 Scientific German

(Prereq. 33.204, 33.205, or equiv.) 4 Q.H.

Review of grammar and syntax; advanced readings in expository German. Articles dealing with chemistry, physics, mathematics, biology, and other disciplines in the arts and sciences, in keeping with the students' major fields.

Prof. Aluf

Spring and Summer Qtrs.

33.217 German Literature in Translation I

4 Q.H.

Elective open to all students. Offers a study of some of the most significant works of German literature in translation. Topics vary from year to year. Language majors receive major credit for this course *only* by making special arrangements with the instructor for extra work to be done. Conducted in English.

Prof. Andrea

Fall and Winter Qtrs.

33.218 German Literature in Translation II

4 Q.H.

Companion course to 33.217. Readings center around the theme of "The Search for Identity". Novels and plays by such 20th-century German authors as Mann, Rilke, Frisch, and Durrenmatt are read.

Prof. Andrea

Spring and Summer Qtrs.

33.227 German Composition and Conversation I

(Prereq. 33.204) 4 Q.H.

Aimed at developing writing and speaking ability. Some grammar review and weekly compositions; prepared and impromptu speaking on a variety of topics dealing with everyday German life.

Miss Boehme

Fall and Winter Qtrs.

33.228 German Composition and Conversation II

(Prereq. 33.227) 4 Q.H.

A continuation of 33.227.

Miss Boehme

Spring and Summer Qtrs.

33.231 Masterpieces of German Literature I

(Prereq. 33.204 or equiv.) 4 Q.H.

Readings of 20th-century works accompanied by selections from major writers extending from the *Hildebrandslied* to Luther.

Miss Boehme

Fall and Winter Qtrs.

33.232 Masterpieces of German Literature II

(Prereq. 33.204 or equiv.) 4 Q.H.

Readings of 19th-century works accompanied by selections from major writers from Luther to the present.

Miss Boehme

Spring and Summer Qtrs.

33.245 Classical Period of German Literature

(Prereq. 33.232 or equiv.) 4 Q.H.

Background and general survey of the period from 1750 to 1800, with particular emphasis on the works of Lessing and Schiller.

Prof. Cooperstein

Offered 1974-75

33.246 The Works of Goethe

(Prereq. 33.232 or equiv.) 4 Q.H.

Dramas, prose writings, and lyric poetry of Goethe. Lectures, collateral readings, reports.

Prof. Cooperstein

Offered 1974-75

33.247 German Literature of the 19th Century

(Prereq. 33.232 or equiv.) 4 Q.H.

Background and general survey of German literature in the 19th century, with particular attention to prose and lyric poetry.

Prof. Cooperstein

Offered 1975-76

33.248 German Drama of the 19th Century

(Prereq. 33.232 or equiv.) 4 Q.H.

Plays by Kleist, Hebbel, Grillparzer, and Ludwig. Lectures, collateral readings, reports.

Prof. Cooperstein

Offered 1975-76

33.249 German Literature of the 20th Century

(Prereq. 33.232 or equiv.) 4 Q.H.

Recent German literature, particularly prose and lyric poetry.

Prof. Cooperstein

Fall and Winter Qtrs.

33.250 German Drama of the 20th Century

(Prereq. 33.232 or equiv.) 4 Q.H.

Plays by Schnitzler, Hofmannsthal, Wedekind, Kaiser, Toller, Unruh, and Weichert.

Prof. Cooperstein

Spring and Summer Qtrs.

33.251 The German Lyric

(Prereq. 33.204 or equiv.) 4 Q.H.

German lyric poetry from the 12th century to the present. Analysis of selected poems, reports, discussions.

Prof. Aluf

Fall and Winter Qtrs.

33.291, 33.292, 33.293, 33.294 Directed Study

4 Q.H. (each)

Staff

All Quarters

33.295, 33.296, 33.297, 33.298 Honors Program

4 Q.H. (each)

Staff

All Quarters

Russian

Prerequisites listed for Modern Languages are based on current course numbers at Northeastern. Equivalent course work done elsewhere will be considered acceptable to satisfy these prerequisites.

34.201 Elementary Russian I

4 Q.H.

Essentials of grammar, practice in pronunciation, progressive acquisition of a basic vocabulary, idiomatic expressions.

Staff

Fall and Winter Qtrs.

34.202 Elementary Russian II

(Prereq. 34.201) 4 Q.H.

Continuation of grammar study; oral and written exercises.

Staff

Spring and Summer Qtrs.

34.203 Intermediate Russian I

(Prereq. 34.202) 4 Q.H.

Designed to further the student's knowledge of Russian through oral and written work; the study of grammar and reading in texts of moderate difficulty.

Staff

Fall and Winter Qtrs.

34.204 Intermediate Russian II

(Prereq. 34.203) 4 Q.H.

Continuation of work and aims of 34.203.

Staff

Spring and Summer Qtrs.

34.207 Scientific Russian

(Prereq. 34.204 or equiv.) 4 Q.H.

Readings of Russian texts in mathematics, physics, chemistry, astronomy, biology, and medical science. Designed to prepare the student for the departmental reading examination he may wish to take in his chosen field. As far as possible, texts are selected on the basis of the students' needs and interests.

Prof. Spiegel

Not offered 1973-74

34.215 Backgrounds of Russian Culture

4 Q.H.

Conducted in English. Designed to give the student a view of all aspects of Russian culture and civilization. The course utilizes guest speakers, films, field trips, and discussions in its presentation. Language majors should consult with the instructor concerning possible major credit.

Prof. Spiegel

Fall and Winter Qtrs.

34.217 The Works of Alexander Pushkin in English Translation

4 Q.H.

A survey and analysis in English of Alexander Pushkin's artistic prose, his lyric, his correspondence, and *Eugen Onegin* (his novel in verse). Some attention is devoted to the story of his life, literary friendships, and major literary influences. Language majors should consult with the instructor concerning possible major credit.

Prof. Spiegel

Spring and Summer Qtrs.

34.227 Russian Composition and Conversation I

(Prereq. 34.204) 4 Q.H.

Designed to develop skills in speaking and writing of colloquial Soviet usage of the Russian language. Classroom work is supplemented with tapes.

Mr. Ford

Fall and Winter Qtrs.

- 34.228 Russian Composition and Conversation II** (Prereq. 34.227) 4 Q.H.
A continuation of 34.227.
Mr. Ford Spring and Summer Qtrs.
- 34.247 Russian Short Story of the 19th Century** (Prereq. 34.204) 4 Q.H.
Detailed analysis of selected short stories of the 19th century read in Russian; study of the development of the genre.
Staff Fall and Winter Qtrs.
- 34.248 Russian Drama of the 19th Century** (Prereq. 34.204) 4 Q.H.
Detailed analysis of selected representative plays read in Russian; study of the development of this genre.
Staff Spring and Summer Qtrs.
- 34.251 Russian Expository Prose** (Prereq. 34.204) 4 Q.H.
Selected readings of lectures, speeches, essays, and critical studies by outstanding Russian scholars.
Staff Not offered 1973-74
- 34.253 Russian Folklore** (Prereq. 34.204) 4 Q.H.
Various genres of Russian folk literature read in Russian. Readings are supplemented with lectures and tape recordings.
Staff Not offered 1973-74
- 34.254 Russian Poetry** (Prereq. 34.204) 4 Q.H.
The major works of important classical and modern poets read in Russian and analyzed.
Staff Not offered 1973-74
- 34.255 Pushkin's Artistic Prose** (Prereq. consent of instructor) 4 Q.H.
Reading of Pushkin's major prose fiction in the original, accompanied by stylistic and structural analyses. Background materials and articles of criticism are consulted. Individual oral presentations by students (in English)) and research papers (in English) by arrangement with instructor.
Prof. Spiegel Not offered 1973-74
- 34.256 Pushkin's Narrative Poetry** (Prereq. consent of instructor) 4 Q.H.
Reading of Pushkin's narrative poems in the original, accompanied by the study of the author's poetic techniques and devices. The evolution of this genre is examined in the light of literary trends, influences, and controversies. Research papers on selected topics in English.
Prof. Spiegel Not offered 1973-74
- 34.291, 34.292, 34.293, 34.294 Directed Study** 4 Q.H. (each)
Staff All Quarters
- 34.295, 34.296, 34.297, 34.298 Honors Program** 4 Q.H. (each)
Staff All Quarters

Italian

Prerequisites listed for Modern Languages are based on current course numbers at Northeastern. Equivalent course work done elsewhere will be considered acceptable to satisfy these prerequisites.

- 35.201 Elementary Italian I** 4 Q.H.
Essentials of grammar, practice in speaking and reading, progressive acquisition of basic language skills.
Staff Fall and Winter Qtrs.
- 35.202 Elementary Italian II** (Prereq. 35.201) 4 Q.H.
Continuation of grammar study and basic language skills. Reading of Italian of increasing

difficulty; practice in conversation.

Staff

Spring and Summer Qtrs.

35.203 Intermediate Italian I

(Prereq. 35.202) 4 Q.H.

Continuation of grammar. Oral practice and the reading of selected texts.

Staff

Fall and Winter Qtrs.

35.204 Intermediate Italian II

(Prereq. 35.203) 4 Q.H.

Continuation of 35.203, with greater emphasis on reading.

Staff

Spring and Summer Qtrs.

35.227 Italian Composition and Conversation I

(Prereq. 35.204) 4 Q.H.

Aims at perfect speaking and writing ability. The basis of work is analysis of the language, oral and written reports, and general discussions. Conducted in Italian.

Prof. Fabrizi

Fall and Winter Qtrs.

35.228 Italian Composition and Conversation II

(Prereq. 35.227) 4 Q.H.

Continuation of 35.227, with stress on individual work, free discussions, and compositions. Conducted in Italian.

Prof. Fabrizi

Spring and Summer Qtrs.

35.231 Masterpieces of Italian Literature I

(Prereq. 35.204) 4 Q.H.

Introductory course in Italian literature. Selected works from the *Trecento* to the 18th century.

Prof. Fabrizi

Fall and Winter Qtrs.

35.232 Masterpieces of Italian Literature II

(Prereq. 35.204) 4 Q.H.

Introductory course in Italian literature. Selected works from the 19th and 20th centuries.

Prof. Fabrizi

Spring and Summer Qtrs.

35.291, 35.292, 35.293, 35.294 Directed Study

4 Q.H. (each)

Staff

All Quarters

35.295, 35.296, 35.297, 35.298 Honors Program

4 Q.H.

Staff

All Quarters

Latin

36.201 Elementary Latin I

4 Q.H.

The essentials of Latin grammar, with progressive acquisition of skill in reading and translation of simple texts.

Ms. Landesman

Fall and Winter Qtrs.

36.202 Elementary Latin II

(Prereq. 36.201) 4 Q.H.

Continuation of 36.201. Additional grammar study and reading practice.

Ms. Landesman

Spring and Summer Qtrs.

Journalism

38.101 History and Principles of Journalism

4 Q.H.

Development of American journalism from European and English beginnings. The problems and contributions of the "Colonial Press", the Revolutionary War period, the "Party Press", the "Penny Press", and the leading contributions to early American journalism. The evolution of freedom of the press and the concurrent responsibility of the press media. Some writing required.

Prof. Speers

Fall and Winter Qtrs.

38.102 History and Principles of Journalism

4 Q.H.

A continuation of 38.101 from mid-19th century. America's great personal journalists and mass circulation "giants" and their contributions: Greeley, Bennett, Raymond, Dana, Grady,

Nelson, Ochs, White, Medill, Pulitzer, Hearst, Scripps, Howard, McCormick, and others. The relationships of journalism to such events as the Civil War, the Spanish-American War; the unfolding principles. Some writing required.

Prof. Speers

Spring Qtr.

38.103 Fundamentals of Newswriting

4 Q.H.

Functions of the editorial department and procedures in obtaining and writing news stories. Extensive practice in writing news stories.

Mrs. Ackerman and Mr. Pothier

Fall and Winter Qtrs.

38.104 Fundamentals of Newswriting

(Prereq. 38.103 or consent of instructor) 4 Q.H.

Problems of reporting and news writing with written assignments in various types of spot news reporting.

Mrs. Ackerman and Mr. Pothier

Spring and Summer Qtrs.

38.105 Techniques of Journalism

(Prereq. 38.104 or consent of instructor) 4 Q.H.

Advanced practice in writing news stories along with editorials, feature stories, criticisms and other assignments.

Mrs. Ackerman and Mr. Pothier

Fall and Winter Qtrs.

38.106 Techniques of Journalism

(Prereq. 38.105 or consent of instructor) 4 Q.H.

Editing the news, with practice in copy editing, headline writing, and newspaper makeup.

Mrs. Ackerman and Mr. Pothier

Spring and Summer Qtrs.

38.107 The Press and Society

4 Q.H.

The relationships of the press media to American society; the various roles of the press; the unfolding legislative pattern before and after the First Amendment; some outstanding court cases concerning the press: i.e., contempt of court, licensing, taxing the press; relationships between the press and the U.S. Post Office. A study project, involving work with professional newspapers, is required.

Prof. Speers

Fall and Winter Qtrs.

38.108 The Press and Society

4 Q.H.

Some of the major legal considerations concerning the press media, such as libel and slander; right of privacy; the public's "right to know"; some current and past restrictive legislation. A study project involving work with professional newspapers, is required.

Prof. Speers

Spring Qtr.

38.121 Television Newswriting

4 Q.H.

Techniques of writing for television news as opposed to writing for other news media. The marriage of script to various video outputs; importance of the writer-reporter in both his new roles as a field-producer and a writer-producer; terms and language used in the production of TV news shows. Actual individual production of student news shows; field trips to TV stations; guest lecturers from the TV news media.

38.130 Advanced Reporting

4 Q.H.

All over the country increasing numbers of special teams are being utilized to handle investigative reporting. This course covers the daily press, but also delves into the techniques used by radio-TV, the underground press, wire services, suburban weeklies, and magazines. Students participate in a selected controversial project and produce a series for publication and broadcast.

38.135 Public Affairs and Journalism

4 Q.H.

A series of seminars featuring well-known professionals from major newspapers, radio-TV stations, wire services, magazines, photography, and public relations. An up-to-date, in-depth explanation of techniques and theories utilized in various media. Instructors include many award winners and even Pulitzer Prize recipients. Sponsored by the New England Chapter of Sigma Delta Chi, the professional journalism organization, to benefit its journalism scholarship program at the University.

38.190 Directed Study in Journalism

(Prereq. consent of instructor) 4 Q.H.

Fall, Winter, and Spring Qtrs.

Economics

Unless otherwise stated, a prerequisite for all advanced economics courses is two quarters of a basic economics course, such as 39.105 and 39.106, or 39.115 and 39.116, or 39.125 and 39.126. Exceptions to this prerequisite made at the discretion of the instructor.

39.105 Principles of Economics

4 Q.H.

Development of macroeconomic analysis; review of national income concepts; national income determination, fluctuation, and growth; role of the banking system and the Federal Reserve System; government expenditures and taxation; international trade; balance of international payments.

Staff

Fall and Winter Qtrs.

39.106 Principles of Economics

4 Q.H.

The role of a market pricing system, demand and supply, in determining the allocation of resources to competing uses and why this system may not function adequately in certain areas. Application of economic principles to private and public problems in such areas as pollution, poverty, and racial discrimination.

Staff

Spring and Summer Qtrs.

39.115 Principles and Problems of Economics

4 Q.H.

An introduction to the conceptual aspects of economics; the flow of national income; economic growth and fluctuation; the role of money and banking; monetary and fiscal policies. Emphasis on developing conceptual tools for use in the analysis of economic problems facing modern society.

Staff

Fall and Winter Qtrs.

39.116 Principles and Problems of Economics

4 Q.H.

Development of basic theory of demand, supply, and market price. Applications to selected microeconomic problems, such as basic economics of monopoly and competition, poverty, race and discrimination, urban affairs, pollution, and other problems which relate to the role of the pricing system in resource allocation and income distribution.

Staff

Spring and Summer Qtrs.

39.125 Economics

4 Q.H.

Macroeconomic problems, theory and policy; basic economic concepts and the institutional setting of the American economic system, its goals and problems; national income and product definition and measurement; the theory of income determination; the relation between prices and money; the mechanics of commercial banking operations, central banking, and monetary policy; government and fiscal policy; appraisal of stabilization policies; economic growth theory and problems.

Prof. Herman

Fall and Winter Qtrs.

39.126 Economics

4 Q.H.

Explanation of elements of demand, supply and cost, market pricing, and allocation of resources. Application of market theory to selected current areas of concern: pollution, poverty, racial discrimination, urban problems, monopoly and competition, etc.

Prof. Herman

Spring and Summer Qtrs.

39.190, 39.191 Directed Study

4 Q.H.

Independent work under the direction of member of the Department on a chosen topic. Limited to qualified seniors majoring in Economics, with approval of Department.

Staff

39.250 Statistics I

4 Q.H.

Elementary set theory, basic probability, Bayesian decision making, measurement and presentation of economic statistics, descriptive statistics, basic estimation techniques, applications.

Staff

Fall and Winter Qtrs.

39.251 Statistics II

(Prereq. 39.250) 4 Q.H.

Testing statistical hypotheses, sampling problems; analysis of variance; correlation and

linear regression analysis.

Staff

Spring and Summer Qtrs.

39.255 Microeconomic Theory

4 Q.H.

A detailed study of supply and demand analysis, various elasticity concepts and applications, theory of consumer demand, theory of production, derivation of cost curves. Detailed analysis of pricing and output behavior in the several market structures with their welfare implication; the pricing of resources.

Staff

Fall and Winter Qtrs.

39.256 Macroeconomic Theory

4 Q.H.

Investigation of the conceptual and empirical problems of creating and using national accounts; price index problems; conceptual and empirical evaluation of several consumption and investment functions, and their policy implications; multiplier and accelerator models; a brief history of recent cyclical fluctuations. Theories of inflation and growth are analyzed in the light of recent economic history.

Prof. Shelby

Spring and Summer Qtrs.

39.259 European Economic Development

4 Q.H.

Economic inheritance of the 19th-century development of capitalism and laissez-faire. The aftermath of the Industrial Revolution, European overseas expansion, the 20th century, the world wars, the dissolution of empires, American economic conquest and European integration, the future of less developed areas in southern Europe. Environmental impact of industrialism and the implications of technological society.

Prof. Schachter

Fall Qtr.

39.260 American Economic Development

4 Q.H.

Economic development of the U.S. from the colonial period to the present; historical changes in available factors; economic institutions and technologies; special attention to preconditions of industrialism. The American Industrial Revolution, its spread and socioeconomic consequences. The Great Depression and the subsequent rise of mixed economy and welfare state; U.S. adjustments to postwar economic changes.

Prof. Shelby

Spring Qtr.

39.261 Economic History of Less-Developed Countries

4 Q.H.

The problems of initiating and sustaining growth in selected third-world countries during the last 200 years, with emphasis on traditional vs. contemporary economic development. Role of Western society; impact of technological and structural changes; relations between states and economic enterprises.

Staff

Winter Qtr.

39.265 Money and Banking

(Prereq. only 39.105, 39.115 or 39.125) 4 Q.H.

The nature and function of money, credit, and monetary standards, and the role of our monetary and banking system in the economy. Topics include: commercial banking, monetary theory and policy, the role and instruments of the Federal Reserve System, and international money problems.

Prof. Caligaris

Spring and Summer Qtrs.

39.266 Government Finance

4 Q.H.

Fiscal functions, institutions, and politics; growth of the public sector; expenditure planning in theory and practice; cost-benefit analysis; principles of taxation and tax incidence; major taxes at Federal and state-local levels; fiscal policy for high employment, price stability, and growth; current fiscal problems such as tax reform, urban fiscal problems, fiscal federalism, and income maintenance programs.

Prof. Musgrave

Fall and Winter Qtrs.

39.267 Economics of Urban Transportation

4 Q.H.

Transportation and land-use patterns; externalities; social costs and social benefits of various modes of urban transportation; ownership, regulations, and financing of various modes of

transportation; economies of new technology in urban transportation.

Staff

Winter Qtr.

39.268 Urban Economics

4 Q.H.

An inquiry into the causes of the location and the growth of urban centers; economic analysis of selected urban problems.

Prof. Brown

Fall and Winter Qtrs.

39.269 Urban Economic Problems and Policies

4 Q.H.

Sequel to Urban Economics. Detailed analysis of urban problems, such as housing, transportation, land use, public services. Exploration of public policies related to such problems.

Prof. Brown

Spring and Summer Qtrs.

39.271 Social Control of Economic Activities

4 Q.H.

Historical development of the government's role in economic affairs. The relationships between the government and industry, labor, agriculture, public utilities, consumers; economy in general; antitrust laws and their effects on market structure and performance; theoretical analysis of interaction of various sectors of the economy.

Prof. Horowitz

Fall and Winter Qtrs.

39.273 Industrial Organization and Public Policy

(Prereq. 39.255) 4 Q.H.

The theoretical framework for analysis and evaluation of the static and dynamic performance of real markets. An examination of the empirical studies testing the usefulness of applying theory to real markets. An examination of antitrust as a public policy designed to promote better market performances.

Staff

Spring Qtr.

39.275 Labor Economics

4 Q.H.

Examination of the economics of the labor market and the labor force and of the institutions and policies dealing with them; employment, unemployment, wage determination, income distribution, and the development and efficient use of labor resources; development of trade unions; collective bargaining issues and their economic consequences.

Prof. Herrnstadt

Winter and Spring Qtrs.

39.277 Economics of the Quality of Urban Environment and Control

4 Q.H.

Economic analysis of air, water, thermal, and noise pollution; the utilization of urban space and other urban resources; identification of possible economic effects of urban environment, such as crime, delinquency, immobility, and congestion.

Prof. Swanson

Fall and Winter Qtrs.

39.278 Poverty and Discrimination

4 Q.H.

Dimensions of poverty in America; the economics of race and racism. Analysis of other contributors to income and wealth inequities: age, education, and sex discrimination; domestic and world poverty.

Prof. Kidder

Fall and Winter Qtrs.

39.279 Manpower and Anti-Poverty Policies and Programs

4 Q.H.

Sequel to 39.278, Poverty and Discrimination; assessment of government and private efforts to fight poverty and improve the labor market position of impoverished groups; relationship between causes of poverty and discrimination; and possible remedies. Manpower training programs, negative income tax, family allowances, and other income maintenance schemes.

Prof. Herrnstadt

Spring and Summer Qtrs.

39.280 Comparative Economics

4 Q.H.

Competing types of theoretical economic systems; analysis of organization and operation of currently existing types of communist, socialist, and capitalist economies; comparison and evaluation of economic behavior and performance of different economic systems.

Profs. Shelby and Schacter

Spring and Summer Qtrs.

39.281 Introduction to Mathematical Economics

(Prereq. 10.105; calculus not required) 4 Q.H.

Functional analysis, matrix algebra, analysis of statistical economics models, derivatives, and differentiation and optimization.

Staff

Fall and Winter Qtrs.

39.282 Mathematical Economics

(Prereq. 39.281 or consent of instructor) 4 Q.H.

For economics, mathematics, business, and engineering students interested in a broad coverage of economic analysis using mathematical techniques as tools. Topics are: models of the firm, demand theory, input-output, and other planning and policy models of the national economy.

Staff

Spring Qtr.

39.285 Economic Development

4 Q.H.

Prospects for economic growth in poor nations as indicated by economic analysis and historical experience; social, cultural, and institutional determinants of growth; implications for the international position and policies of the U.S.

Prof. Schachter

Fall and Winter Qtrs.

39.286 International Economics

4 Q.H.

Introduction to the theory of international trade and its role in resource allocation; implications of economic welfare; foreign exchange; the balance of payments mechanism; and problems of disequilibrium and adjustment.

Prof. Lapan

Spring Qtr.

39.288 Economic Growth and Instability

4 Q.H.

Measurement and cost of economic growth and instability; long-run models and explanations of aggregate growth; short-run models and causes of fluctuations in output, employment, and prices; long-run projections and short-run forecasts of aggregate change; policies for optimal growth and stability.

Prof. Shelby

Fall and Winter Qtrs.

39.289 Advanced Economic Theory

(Prereq. 39.255 and 39.256) 4 Q.H.

Advanced theoretical treatment of selected topics in microeconomics and macroeconomics. Recommended for students planning to take graduate economics.

Staff

Spring Qtr.

39.291 Senior Economic Seminar

(Prereq. 39.255 and 39.256) 4 Q.H.

Course for senior Economics majors; coordinating and applying economic concepts, methodology, and data to contemporary issues and problems of broad social, economic, and philosophical importance.

Prof. DeCicco

Spring Qtr.

39.292 History of Economic Thought

4 Q.H.

Comprehensive course of study in the development of economic thought. Coverage includes mercantilism as the first economic doctrine; analysis of older classical school, its later refinements (modern marginalism), and its important critics (socialists, Marxists); Keynesian and modern developments.

Prof. DeCicco

Spring Qtr.

39.293 Introduction to Econometrics

(Prereq. 39.251) 4 Q.H.

The methods of econometric estimation and forecasting. Coverage includes topics in various statistical techniques. Students are given the opportunity to construct their own models and use computer facilities for estimation and forecasting.

Staff

Spring Qtr.

39.294 Problems in Economic Research

4 Q.H.

Research methods of practicing economists with typical problems from applied areas of economics and choice of modeling framework; problems of data collection, review of estimation techniques and interpretation of results; development of static and dynamic adaptive policy models.

Staff

Spring Qtr.

39.295, 39.296, 39.297, 39.298 Honors Program
 Prof. DeCicco

(each) 4 Q.H.
 All Quarters

Accounting

41.111 Accounting Principles I

4 Q.H.

An exploration of the relationship between business activity and accounting, with focus on the nature and purpose of accounting; the uses of management accounting data and reports.

Staff

Fall and Winter Qtrs.

41.112 Accounting Principles II

(Prereq. 41.111) 4 Cl.; 4 Q.H.

Emphasizes financial reporting, measuring and appraising the financial results of business operations, and accounting for business assets.

Staff

Spring Qtr.

41.201 Introduction to Accounting—I.E.

4 Q.H.

To acquaint Engineering students with the basic purposes, principles, and practices of financial accounting; to discuss cost patterns and measurements in terms of their limits and usefulness; and to familiarize students with managerial accounting, including such topics as break-even analysis, budgets, standard costs, and capital budgets.

Staff

Fall and Winter Qtrs.

41.205 Cost Accounting for Management

(Prereq. 41.112) 4 Q.H.

An examination of cost accounting from a managerial viewpoint. The impact of quantitative and behavioral aspects on budgets and cost control is stressed.

Prof. Grossman and Staff

All Quarters

41.207 Analysis of Financial Statements

(Prereq. 41.112) 4 Q.H.

Preparation of accounting statements; uses of ratios and analytical statements; composition of statements and statement classification; fund and cash flow analysis.

Prof. Malchman

Not Offered 1973-74

41.210 Introduction to Accounting - L.A. (Formerly Accounting Principles)

4 Q.H.

For Liberal Arts undergraduates. A survey of the foundations of accounting and the role accounting plays in the management of the profit and non-profit sectors of the American economy.

Staff

Spring and Summer Qtrs.

41.213 Survey of Federal Taxes

(Prereq. 41.112) 4 Q.H.

Intended for the student who *has not majored in Accounting* but who desires to gain a basic appreciation and understanding of the Federal tax structure rather than detailed knowledge. A survey of Federal taxation as it applies to individuals, partnerships, corporations, gifts, estates, trusts, and business decisions.

Prof. Malchman

Spring and Summer Qtrs.

41.251 Intermediate Accounting

(Prereq. 41.112) 4 Q.H.

Emphasis on accounting theory and concepts, together with an analysis of the special problems that arise in applying these concepts to financial accounting. Areas discussed are: the basic accounting process, cash receivables, liabilities, and inventory valuation.

Prof. Slavin

Fall and Winter Qtrs.

41.252 Intermediate Accounting

(Prereq. 41.251) 4 Q.H.

Continuation of the discussion of the structure of accounting theory and its underlying issues, together with an evaluation of the conflicts and shortcomings in accounting concepts. Areas discussed are investment in productive resources and accounting for corporations.

Prof. Slavin

Spring and Summer Qtrs.

41.253 Cost Accounting I

(Prereq. 41.112) 4 Q.H.

The accumulation of cost data for managerial analysis and control; familiarization with product costing systems and their usefulness.

Prof. Curran

Fall and Winter Qtrs.

41.254 Cost Accounting II

(Prereq. 41.253) 4 Q.H.

Budgetary planning and control, with emphasis on using cost data for decision-making.

Prof. Curran

Spring and Summer Qtrs.

41.257 Auditing

(Prereq. 41.252) 4 Q.H.

Designed to give the Accounting major a thorough knowledge of auditing through the application of auditing principles and adherence to auditing standards; the ethics of the profession; and the significance of new and advanced audit techniques.

Staff

Spring and Summer Qtrs.

41.260 Federal Taxes

(Prereq. 41.112) 4 Q.H.

Intended primarily to provide a comprehensive study of the Federal tax structure for the Accounting major who plans to enter the professional field of accounting. The student researches cases which introduce the various source materials on basic tax problems apart from specific changes made in the Internal Revenue Code. The course contains a thorough study of Federal taxation approaches to individuals, partnerships, and corporations.

Prof. Malchman

Fall and Winter Qtrs.

41.262 Accounting Theory and Practice

(Prereq. 41.252) 4 Q.H.

Objectives are to examine: 1. the theory and practice of corporate financial reporting and some of the controversial areas in accounting; 2. the pronouncements and research studies of the authoritative institutions of the profession relating to the practice of accounting; 3. the textual and periodical literature on accounting theory.

Prof. Roy

Fall and Winter Qtrs.

41.263 Accounting Planning and Control

(Prereq. 41.112) 4 Q.H.

The organization as a system, considering the informational needs for long- and short-run planning. The control mechanism in goal attainment. Includes both quantitative and behavioral aspects of planning and control.

Profs. Lindhe, Carter, and Staff

Spring and Summer Qtrs.

41.264 Advanced Accounting Problems I

(Prereq. 41.252) 4 Q.H.

Intended for the student who is planning to enter the professional field of accounting. Included are pronouncements and recent statements by authoritative bodies, as well as discussions of the various approaches to problem solving and a review of the accounting principles involved. Among the topics are: partnerships, installment sales, consignments, home office and branch office relationships, and governmental and institutional accounting.

Prof. Malchman

Fall and Winter Qtrs.

41.265 Management Accounting

(Prereq. 41.205, 41.253, or consent of instructor) 4 Q.H.

Designed as an "enlarged" managerial accounting course in which accounting technique is made subordinate to a consideration of management uses of the end products of accounting analysis. Its main objective is a greater appreciation of the role of accounting in the basic management functions of planning, controlling, and decision making.

41.266 Contemporary Accounting Problems

(Prereq. 41.252) 4 Q.H.

A seminar designed to survey some of the important problem areas currently facing the accounting profession: 1. the criteria for a profession, 2. the legal and ethical responsibilities of the profession, 3. the profession's social responsibilities, and 4. the accounting and reporting requirements of the Securities and Exchange Commission and other Federal agencies.

Prof. Roy

Spring and Summer Qtrs.

41.267 Tax Factors in Business Decisions

4 Q.H.

A survey of the role of taxes in decisions involving mergers, acquisitions, profit sharing, pension plans, contracts, costing procedures, employee compensation, and other tax-planning variables.

Prof. Curran

Spring and Summer Qtrs.

41.268 Appraisal of Management Enterprise

(Prereq. 41.112, 41.205 or 41.253) 4 Q.H.

Designed to examine the usefulness of accounting data in management appraisal, the course

also discusses various approaches for accountants to provide a management appraisal which goes beyond the conventional financial statement. Topics are: management's social responsibilities, the attest function and possible extensions, behavioral aspects of using accounting data for performance evaluation, the accountant's role as a consultant, "management auditing," and "social audits."

41.269 Advanced Accounting Problems II

(Prereq. 41.252) 4 Q.H.

Intended for the student who plans to enter the professional field of accounting. The course consists of a concentrated study of three areas: 1. consolidations, 2. fiduciaries, and 3. actuarial science. Pronouncements and recent statements by authoritative bodies are discussed. Problem solving is used to demonstrate the application of accounting principles.

Prof. Malchman

Spring and Summer Qtrs.

Marketing

43.120 Introduction to Marketing

4 Q.H.

An overview of marketing and its role both within the firm and within society. Emphasis on the pervasive interrelationships among dynamic dimensions of the environment, marketing activities, consumer attitudes, and consumer behavior. Open as elective to non-CBA sophomore and upper-class students.

Staff

All Quarters

43.125 Consumer Problems of the 70s

4 Q.H.

Readings, discussions and class projects are used to examine and evaluate the responsibilities of business to society and to the consumer. Elective open to all upperclassmen.

Prof. Collazzo

Fall and Winter Qtrs.

43.223 Introduction to Advertising

4 Q.H.

An overview of advertising and its role in our society. Advertising is examined: 1. as part of marketing, 2. as a communications process and 3. as a viable social and economic force. Open to all upperclassmen.

Prof. Dufton

Fall and Winter Qtrs.

43.233 Retail Management

(Prereq. 43.120 or consent of instructor) 4 Q.H.

From a marketing management point of view, study is made of the activities and contributions of major retailing institutions, including department and specialty stores, supermarkets, and discount outlets. Upper-class elective.

Prof. Minichiello

Spring and Summer Qtrs.

43.235 Marketing Channels

(Prereq. 43.250 or consent of instructor) 4 Q.H.

Marketing structures and institutions; their evolution, functions, interrelationships, and the management of their role in the marketing process. Upper-class elective.

Prof. Verma

Every Other Year, Spring Qtr.

43.240 Marketing Research

(Prereq. 43.251 or consent of instructor) 4 Q.H.

The use of marketing research as a tool in planning and controlling marketing activities, including an introduction to the application of behavioral and quantitative concepts in the solution of marketing programs. Upper-class elective. Required for Marketing juniors.

Profs. Wiseman and Moriarty

Fall and Winter Qtrs.

43.242 Sales Management

(Prereq. 43.250) 4 Q.H.

Creation, management, and appraisal of the sales force. Case studies and discussions, plus selected readings. Junior and senior elective.

Prof. Minichiello

Every Other Year, Spring Qtr.

43.244 Quantitative Methods for Marketing Management

(Prereq. 49.251) 4 Q.H.

The contribution of quantitative techniques and the computer to decision-making in marketing and related business policy areas. Junior and senior elective.

Profs. Verma and Wiseman

Every Other Year, Spring Qtr.

43.250 Marketing Management I

(Required of Marketing majors) 4 Q.H.

An introduction to market analysis and the design and implementation of marketing

strategies. Of primary concern is the appraisal of the environment of business and marketing activities, with particular emphasis on factors affecting the nature and extent of consumer demand. An upper-class elective prerequisite to a number of other elective Marketing courses. Open to non-Marketing majors in middler, junior, and senior years.

Profs. Minichiello and Verma

Fall and Winter Qtrs.

43.251 Marketing Management II

(Prereq. 43.250) 4 Q.H.

A continuation of 43.250. Based on understanding of business and marketing environment and of consumer demand, this quarter focuses on the interrelated roles of product, price, distribution and promotion in the development and operation of marketing programs. Upper-class elective required of Marketing middlers.

Profs. Dufton and Verma

Spring and Summer Qtrs.

43.261 International Marketing

4 Q.H.

The opportunities, methods, and policies in management of international marketing programs. Upper-class elective.

Prof. Verma

Fall and Winter Qtrs.

43.262 Advertising Management

(Prereq. 43.251 or consent of instructor) 4 Q.H.

Advertising management through class discussions of case studies selected to illustrate means of achieving proper balance and coordination of advertising with other elements in the marketing mix. Junior and senior elective.

Prof. Dufton

Fall and Winter Qtrs.

43.265 Industrial Marketing

(Prereq. 43.250 or consent of instructor) 4 Q.H.

The marketing of products where business firms are the potential customers. Upper-class elective, open to juniors and seniors.

Prof. Dufton

Every Other Year, Spring Qtr.

43.270 Senior Seminar in Marketing

(Prereq. 43.251) 4 Q.H.

An in-depth study of selected topics in marketing. The subjects explored will differ each time the seminar is offered, based on the research interests of the instructor. An elective course open only to seniors.

Senior members of the Department

Spring Qtr.

43.271 New Product Development

(Prereq. 43.120) 4 Q.H.

An analysis of the problems which firms face in directing and managing their new product development activities. Open to seniors only.

Profs. McDonald and Verma

Spring Qtr.

43.275 Foundations of Consumer Behavior

(Prereq. 43.120) 4 Q.H.

Economic, behavioral, and other models of consumer behavior are examined as bases for the planning and evaluation of marketing effort. Upper-class elective.

Profs. Dufton and McDonald

Fall and Winter Qtrs.

43.277 History of Marketing Thought

(Prereq. 43.251) 4 Q.H.

An analytical survey of the evolution of marketing and marketing thought. Emphasis is on changes in the role of marketing as practiced by business firms and as viewed by society. All upperclassmen.

Prof. Collazzo

Every Other Year, Spring Qtr.

43.278 Competitive Strategy

(Prereq. 43.251) 4 Q.H.

The capstone marketing course, a required elective for seniors majoring in Marketing. The focus is upon the formulation of marketing strategy at a policy level and its implementation in a dynamic environment.

Prof. McDonald

Fall and Winter Qtrs.

Finance and Insurance

44.120 Introduction to Financial Activity

4 Q.H.

Acquaints students with the important analytical tools, habits of thought, concepts and

knowledge surrounding the management of the flow of funds within the corporation. Deals with the firm's demand for capital, sources of capital, management of assets, dividend payments, and forecasting of funds needed.

Profs. Cerullo, Willett, and Staff

All Quarters

44.144 Management of Financial Institutions

(Prereq. 44.120) 4 Q.H.

The broad range of decision-making problems faced by major financial institutions, such as commercial banks, savings and investment institutions, and finance companies when viewed as competitive, profit-seeking business entities. The course considers such topical areas as the nature and scope of the capital markets confronting these institutions, specialized problems with regard to the sources and uses of funds of the financial institutions, and strategic policy planning of financial institutions.

Prof. Fletcher

Fall and Winter Qtrs., 1973-74

44.150 Corporate Financial Management

(Prereq. 44.120) 4 Q.H.

Extends a student's grasp of theory and analytical tools and concepts which have general applicability in most profit- and nonprofit-seeking organizations through readings and case discussions. Such analysis is primarily concerned with the evaluation of expected benefits from invested capital in relation to its costs and availability. While techniques of economic appraisal are stressed, the course also aims to locate financial valuation within the overall structure of administrative decisions concerning the allocation of an organization's financial resources.

Prof. McCarthy and Staff

Fall and Winter Qtrs.

44.151 Interpreting Financial Data

(Prereq. 44.120) 4 Q.H.

Development of the capacity for proper utilization of outputs of the financial accounting process for purposes of financial management, and the associated decision-making tasks. The specific objectives are fourfold: 1. an understanding of the differences between cash flows and reported profit (i.e., net income); 2. an awareness of the implications of "generally accepted accounting principles" for financial management; 3. recognition of the need for balancing attention to profitability matters with concern for balance sheet considerations (e.g., liquidity and solvency); and 4. an understanding of the auditor in achieving creditability with respect to financial data. Contemporary issues in financial reporting are examined, with the view of illuminating the basic ideas of the course.

Prof. Caplan and Staff

Fall and Winter Qtrs.

44.159 Small Business Finance

(Prereq. 44.120) 4 Q.H.

Investigates the financial requirements of smaller businesses and the sources of funds open to them. Methods of financial control in the small business are covered, as well as requirements of financing institutions. The problem of obtaining adequate equity financing and equity sources is highlighted.

Prof. Hehre

Fall and Winter Qtrs., 1974-75

44.160 International Financial Management

(Prereq. 44.150) 4 Q.H.

The issues and problems encountered by the financial function of an international firm. Considers the investment and financing decisions of a firm in the context of an international or multi-country environment. Specific topics are: capital budgeting, capitalization policies, the use of Eurocurrency and Euro-bond markets, and liquidity management by the international firm.

Prof. Duckworth

Spring and Summer Qtrs., 1973-74

44.161 Financial Control Systems

4 Q.H.

The control process in the management of any organization and the role of systematic financial controls in facilitating that process. Particular attention given to the needs of financial managers as key participants in the process. The relationships between financial planning activities and financial control are examined. Other areas of emphasis in the course are: profit planning, budgeting, performance evaluation, and incentives tied to measured performance.

Prof. Caplan

Fall and Winter Qtrs., 1973-74

44.162 Risk Management

(Prereq. 44.120) 4 Q.H.

The concept of risk and the ways of dealing with it, including risk reduction, risk combination, and insurance. Considerations of cost and risk management in comparison to the risk-cost preferences of the insurer.

Prof. Hehre

Spring and Summer Qtrs., 1973-74

44.180 Investment Strategy

(Prereq. 44.120) 4 Q.H.

The objective is to present selection and valuation techniques for the purpose of constructing an investment portfolio of financial assets including common stocks and bonds. Topics covered are the evaluation of individual security risk and return characteristics and the interpretation of financial market behavior in the context of security valuation. Emphasis is placed upon ways of evaluating individual security characteristics for portfolio purposes.

To be announced

Fall and Winter Qtrs.

44.185 Management of Financial Resources

(Prereq. 44.120) 4 Q.H.

Focuses on the raising of the supply of funds and their allocation to long-term uses in order to accomplish an organization's objectives. Standard and innovative types of securities surveyed and techniques for choosing the best mix of securities developed. The processes by which funds are obtained are described. The determination of investment opportunities and systems for their evaluation are presented.

Prof. Marple

Spring and Summer Qtrs., 1974-75

44.220 Insurance and Enterprise

(Prereq. 44.120) 4 Q.H.

A broad course approach to the theory and economics of the use of life, property, and casualty insurance in enterprises. Emphasis placed on the principles underlying the selection and use of insurance as a tool to reduce risk exposure, as well as a thorough review of contract provisions, rate making, and loss adjustment.

Prof. Willett

Spring and Summer Qtrs., 1974-75

44.240 Personal Finance

(Open to Business Administration students only with consent of instructor) 4 Q.H.

The management of the total personal estate; budgeting, savings, insurance, investments, borrowing, taxes, social security, pensions, annuities, securities markets, mutual funds, and their integration.

Prof. Cerullo

All Quarters

44.255 Estate Planning

(Prereq. 44.120) 4 Q.H.

Estate planning is essential for anyone who intends to advise others in the area of financial planning or desires to accumulate funds for himself or his dependents. It is concerned both with the accumulation of capital and its preservation. The objective of financial planning is to provide essential information necessary to make intelligent decisions and a knowledge of available alternatives. Expertise in this field requires an understanding of methods of integrating life insurance into an overall financial plan; a knowledge of basic information concerning wills, trusts, gifts, etc.; methods of funding business continuation; and estate liquidity requirements.

Prof. Willett

Fall and Winter Qtrs., 1974-75

44.260 Financial Planning

(Prereq. 44.120) 4 Q.H.

A review and evaluation of the theory and practice related to forecasting business and financial operations on both the short and long run. Particular attention is paid to controlling operations within goals and plans established by management and within constraints imposed by the industry and national economy. The relationship of the business enterprise to the national economy is stressed.

Prof. Hehre

Spring and Summer Qtrs.

44.275 Money and Economic Activity

(Prereq. 44.120) 4 Q.H.

It is said: "Money is that institution which brought humanity from a primitive stage into civilization" and there is much truth in this statement. An American industrial society oriented toward general welfare and stability is also inconceivable without the help of a sound and well-organized monetary and banking system. In this spirit, the study of money and

economic activity enriches the background of any student in business and finance with valuable knowledge for becoming an enlightened manager and citizen.

Profs. Fletcher and Rugina

Spring and Summer Qtrs.

44.290 Business Ethics

4 Q.H.

The survival of the American economic system depends, to a considerable degree, on the faith which the public places in the integrity of its business leaders. Their decisions are emulated and affect the national, ethical, and economic health. Individual student participation in this course assists students in recognizing the added complexity brought to business problems by a consideration of ethics and/or responsibility and helps students to construct and solidify a personal code of ethics which they may follow in their own careers.

Prof. Willett

44.295 The Development of the Capitalistic System

4 Q.H.

Introduction to the arguments surrounding the nature and functioning of the American capitalistic system and capitalism in general. One school of thought accuses the system of being monopolistic, whereas another defends the system as being competitive. Around this argument, excerpts from the work of great economists are used to show the development of tools of analysis for a better understanding of western capitalistic society and its problems.

Prof. Rugina

Spring and Summer Qtrs., 1974-75

Management

45.112 Business Policy

(Prereq. 45.210) 4 Q.H.

Corporate strategy and its elements, including an analysis of the company, its resources and opportunities, its environment, and decision makers. Emphasis on decision making and implementation of strategy while operating a company in the context of a business simulation.

College of Business Administration Faculty

All Quarters

45.114 Social Change

(Prereq. 45.210 or consent of instructor) 4 Q.H.

Extends the student's understanding and awareness of the dynamics of group behavior by intensive experiential involvement, particularly through the use of situational scenarios in which classroom setting becomes the research learning laboratory. Selective use is made of related research on groups.

Prof. Rochwarg

Spring Qtr.

45.115 Small Group Behavior

(Prereq. 45.210 or consent of instructor) 4 Q.H.

Seminar survey of various contemporary views about the determinants, directions, and projected effects of a rapidly changing society on the behavior of individuals and groups, and such institutions as the industrial organization. This is fundamentally a reading /discussion seminar, and the class size is limited to students having a serious interest in examining a range of conceptual views on the nature of revolutionary social change in this decade, explaining its manifest signs, and projecting its implications.

Prof. Rochwarg

Spring Qtr.

45.160 Operations Planning and Control

(Prereq. 45.265) 4 Q.H.

The requirements of planning in order for an enterprise to respond to customer demand and the control functions necessary for successful operations. The development of the planning and control system, inventory planning and control, forecasting for operations planning, and operations scheduling.

Prof. Olive

Spring Qtr.

45.209 Organization Behavior I

4 Q.H.

Application of concepts from the behavioral sciences to an understanding of the behavior of people in organizational settings. Focus is on systematic approaches to understanding behavior, looking at people as individuals and as members of small groups, and determining

implications for management. Emphasis on the development of student skills in applying behavioral concepts to situational problems.

Human Resources Faculty

Fall and Winter Qtrs.

45.210 Organization Behavior II

(Prereq. 45.209) 4 Q.H.

Continuation of study of behavior of people in organizations. Initial focus is on behavior of people in two-person relations and as members of separate groups. Later focus is on the understanding of large, complex organizations and simultaneous development of student's skill in planning and achieving change.

Human Resources Faculty

Spring and Summer Qtrs.

45.212 New Venture Creation

4 Q.H.

Designed to assist students interested in small business to answer a number of important questions through a systematic analysis of their own potential for an entrepreneurial career: i.e., What is my own entrepreneurial career? What is my own entrepreneurial orientation and commitment? What managerial and behavioral skills do I need for achievement? How do I plan for my personal and entrepreneurial goals?

Prof. Olive and Timmons

Spring Qtr.

45.250 Business and Society

(Prereq. 45.210) 4 Q.H.

An analysis of developing external influences on the business organization—social, legal, economics, cultural, ethical, and technical. Examination of the corporation in its interactions with these forces. Focus on reconciling the strains generated by these societal factors and their impact on the management and decision-making process.

College of Business Administration Faculty

All Quarters

45.251 Comparative Management

4 Q.H.

The ways in which organizational structure and management processes are shaped by the mission and objectives of the organization. Examination of different types of organizations: profit-oriented business organizations, public corporations, governmental agencies, unions, schools and universities, research laboratories, police and military organizations, hospitals, trade associations, and voluntary groups.

Prof. Marshall

Fall and Winter Qtrs.

45.258 Dynamics and Practice of Superior-Subordinate Relations

(Prereq. 45.210 or consent of instructor) 4 Q.H.

Behavioral theory and concepts applied to the understanding and performance of the leadership function in organizational management. Various laboratory procedures used in conjunction with discussion sessions to highlight individual and group concepts in problem sensing, location, and exercises as key guides to understanding.

Prof. T. Anderson

Spring Qtr.

45.260 Personnel - Industrial Relations

(Prereq. 45.210) 4 Q.H.

Investigating man and his institutions in the world of work. The "actors" (i.e., business organizations, managers, workers and unions) are examined in order to ascertain the assumptions, objectives, values, and behavior of each party under constraints. Among combinations of constraints considered are: technology, market or budgetry, legal, public values, and political systems. Utilizing the interactions which occur between the actors in the system, the student studies current problem areas of personnel and industrial relations.

Prof. Hobart and Marshall

All Quarters

45.261 Interpersonal Relations

(Prereq. 45.210 or consent of instructor) 4 Q.H.

An intensive inquiry into the communication from one person to another—the longest distance of all. Makes use of unconventional media for learning: selected films, drama, and the short story, in which universal qualities of the interactions between people are described, analyzed, and reinterpreted in different settings in today's world.

Prof. Rochwarg and Walker

Spring Qtr.

45.262 Collective Bargaining by Professional Associations

4 Q.H.

In recent years professional employers have become more numerous. They, in turn, have

made the management of organizations more complex by introducing into the employment relationship the issue of professional self-determination of goals and responsibilities. Within professional associations such as engineering, teaching, nursing, and medicine, new structures have been formed for purposes of collective bargaining, as well as for more traditional economic reasons of salaries and working conditions. The purpose of the course is to compare these different structures and to evaluate the impact of important social factors. These factors include: the development and present status of the profession, its level of autonomy, its self-image, and the market demand for its services. Case analyses, reading, guest lecturers, and independent research are utilized.

Prof. Hobart

Spring Qtr.

45.263 Career Planning and Managerial Skill Assessment

(Consent of instructor (Prereq. 45.209, 45.210) 4 Q.H.

Effective career planning and development can be viewed most profitably in the larger context of an individual's actualization process in life. On the one hand, the student explores his career with reference to personal values, interests, aspirations, sense of self-worth and managerial skills, and on the other, the realities of specific occupational and professional choices. During the course each participant provides and analyzes a wide variety of data for better insight into his career future and the specific steps leading to greater goal fulfillment. Designed for ninth- and 10th- quarter students.

Prof. Croke

Summer Qtr.

45.265 Production Management

(Prereq. 49.251) 4 Q.H.

Production management is concerned with planning and controlling the use of such resources as men, materials, facilities, technology, and information to accomplish the objectives of an organization. The course provides a basic understanding of the management of the production system—its design, operation, control, evolution, and modification—to enhance managerial decision making in technical matters. Topics discussed are: design of product and process, human factors concepts, capacity considerations, man-systems, work measurement, wage administration, production planning, inventory management production control, and product quality management.

Profs. Ammer, Godin, Olive, and Shore

All Quarters

45.275 Labor Law

(Prereq. 45.260, 39.275) 4 Q.H.

The changing judicial principles and statutory standards of employment and management-union relations since 1800.

Prof. Myers

Fall and Winter Qtrs.

45.276 Seminar in Collective Bargaining

(Prereq. 45.275) 4 Q.H.

Cases or reports on problems faced by industrial relations departments dealing with employees through collective bargaining. Individual research.

Prof. Myers

Spring Qtr.

Transportation

48.101 Principles of Transportation

(Prereq. 39.105) 4 Q.H.

The political, social, and economic functions of transportation; development and structure of the domestic transportation system; the nature of government regulation and promotion of the several modes.

Prof. Lieb

Fall and Winter Qtrs.

48.102 Current Issues in Transportation Policy

(Prereq. 48.101) 4 Q.H.

An overview of the regulatory process and its impact on the domestic transportation system. Critical examination of topical policy issues which confront carriers, shippers, and the agencies of regulation.

Prof. Lieb

Fall and Winter Qtrs.

48.103 Carrier Management

(Prereq. 48.101) 4 Q.H.

The transportation system from the carrier's viewpoint; managerial response to a heavily regulated and rapidly expanding environment; focus on carrier decision-making involving routes, scheduling, financing, and pricing of services.

Prof. Lieb

Fall and Winter Qtrs.

48.104 Physical Distribution Management

(Prereq. 43.120) 4 Q.H.

Movement, distribution, and control of raw material and finished goods flows. Examination of the importance of inventory control, scheduling, warehousing, and transportation in the design and operation of distribution systems.

Prof. Lieb

Spring and Summer Qtrs.

48.105 Urban Transportation

(Prereq. 39.105) 4 Q.H.

Impact of private and public transport systems on urban development. The planning and implementation of government programs concerning construction and promotion of system alternatives.

Prof. Lieb

Spring and Summer Qtrs.

General Business

49.100 Introduction to Business

4 Q.H.

The business organization as a system of interrelated functions and operations; the interactions between the organization and its environment; and the role of management in business organizations.

College of Business Administration Faculty

Fall and Winter Qtrs.

49.101 Introduction to the Computer

(Prereq. 10.125) 4 Q.H.

Provides the undergraduate business student with a basic computer capability. The student develops a familiarity with the computation center and experience in the use of canned programs. Skills developed are reinforced and augmented in core and elective courses in upper-class years.

Profs. Briggs, Grossman, and Staff

Fall and Winter Qtrs.

49.107 Small Business Management

4 Q.H.

The characteristics and problems of small enterprises at different stages of their life cycle, from post-natal to maturing periods. Focus is on the operating problems and strategies of established small enterprises for the benefit of students whose careers as owner-managers and consultants, or in venture financing, are likely to be centered on the smaller business.

Prof. Olive

Spring Qtr.

49.108 Opportunity Identification and Analysis

(Prereq. 45.212 or consent of instructor) 4 Q.H.

Emphasis is on risk taking in new business ventures, rather than on day-to-day management. Cases and readings focus on the opportunities, risks and contributions necessary for success in an entrepreneurial career. Case discussions on starting or acquiring companies stress the finding of a suitable opportunity, appraisal of profit potential, determination of acceptable purchase price, negotiation of terms, raising of capital, and organization of a new business.

Profs. Olive and Timmons

Fall Qtr.

49.109 Statistical Methods for Data Analysis

(Prereq. 49.205) 4 Q.H.

Examines some of the most commonly used methods for analyzing large and small quantities of data. Included are: 1. regression and correlation, 2. chi-square, 3. discriminant, 4. factor analysis, 5. sampling, and 6. designing and analyzing experiments. Extensive use is made of laboratory (problem) sessions and of canned computer programs which require no previous computer experience.

Prof. Wiseman

Spring Qtr.

49.155 Legal Aspects of Business

4 Q.H.

The legal aspects of business transactions and business relationships involving contracts, agency, negotiable instruments, suretyship, and guaranty.

Profs. Fiumara and Scioletti

All Quarters

49.156 Management Planning and Control

(Prereq. 41.105, 45.210) 4 Q.H.

Develops systematic and integrated framework of concepts and theory useful for consideration of management control, and for the design and implementation of management control systems. Integrates pertinent material from the formal disciplines, particularly those in organizational behavior, with "control." Develops skill in analyzing real-world situations involving management control considerations. Achieves higher level of understanding of the interrelated nature of the management control process with other processes operating within an organization and the broader functional areas of business. The course covers the following topics: basic conceptual framework, responsibility centers, measurement, expense centers, profit centers and transfer pricing, investment centers, planning and budgeting, control reporting, incentives for performance, organizational relationships (role of controller), and evaluation of comprehensive systems.

Prof. Caplan

Fall and Winter Qtrs.

49.206 Management Information Systems

(Prereq. 49.251) 4 Q.H.

The design and implementation of a computer-based management information system. Includes programming, flow diagramming, and documentation of business subsystems. A term project requirement provides experience with realistic design problems and computer application. Computer Model 6000 Series is used.

Prof. Gubellini

Spring and Summer Qtrs.

49.210 Legal Aspects of Business Organization and Property

(Prereq. 49.155) 4 Q.H.

The legal aspects of the typical forms of business ownership. The law of sales and property transactions in business.

Profs. Fiumara and Scioletti

Fall and Winter Qtrs.

49.212 The Law of Wills, Trusts, and Estates

4 Q.H.

The requirements of a valid will, claims of and against the estate, and final distribution of property. The requirements of a valid inter-vivos trust, a testamentary trust, the responsibilities and liabilities of a trustee, the rights of beneficiaries, and administration of an estate, both formal and informal.

Prof. Scioletti

Spring Qtr.

49.240 Law in Society

4 Q.H.

Acquaints the student, as a member of society, with his legal rights, obligations, and responsibilities applicable in his relationship with others and with the state.

Profs. Fiumara and Scioletti

Fall, Winter, and Spring Qtrs.

49.250 Quantitative Methods I

(Prereq. 10.125) 4 Q.H.

Topics treated are: descriptive statistics, statistical inference (probability), sampling, payoff table analysis, probability distributions, statistical estimation, hypothesis testing, and Bayesian statistics. The course is characterized by a decision-making orientation.

Profs. Briggs, Grossman, Moriarty, Parsons, Shelley, and Wiseman

Fall and Winter Qtrs.

49.251 Quantitative Methods II

(Prereq. 49.250) 4 Q.H.

The role of the model as an analytical device designed to aid the decision maker. Simple regression and correlation, multiple regression and correlation, exponential smoothing, linear programming, network models, and simulation models.

Prof. Briggs, Grossman, Moriarty, Parsons, Shelley, and Wiseman

Spring and Summer Qtrs.

49.258 Accounting Systems and Data Processing

(Prereq. 41.112) 4 Q.H.

Information flows throughout the organization; the use of quantitative decision techniques in planning and control; the concept of the integrated and the total information system; and the

applications of computer programming to business, nonprofit organizations, government, and other areas.

Prof. Grossman

Fall and Winter Qtrs.

49.261 Quantitative Models in Operations Analysis

(Prereq. 45.265) 4 Q.H.

The use of quantitative models for understanding problems in the management of complex systems. The course draws on linear programming, integer programming, transportation method, dynamic programming, simulation, and network analysis. These techniques are used in the following problem areas: capital investment, replacement, materials handling, line balancing, project scheduling, and planning and control.

Prof. Shore

Spring Qtr.

49.262 Independent Study

4 Q.H.

For a student who has received approval of a proposal to undertake independent study in lieu of any course required in the various concentrations. Each teaching area considers proposals presented by students to its Independent Studies Committee for evaluation and approval. Every proposal requires a detailed outline of the objectives and plan of study and must be accompanied by a supporting statement from the supervising faculty member under whose direction the study will take place. A copy of the final report prepared by the student will be presented to the appropriate Independent Studies Committee. Further information about the Independent Studies Program can be obtained from Area Coordinators.

College of Business Administration Faculty

All Quarters

Education Foundations

50.114 Education and Social Science

4 Q.H.

Introduction to the social scientific analysis of education and a brief exposure to the methods and thinking of these social sciences. The student should develop an orientation to and awareness of the complexity of the educational scene in America and the world today.

Staff

Fall and Winter Qtrs.

50.121 Human Development and Learning I

4 Q.H.

Developmental processes from prenatal life up to adolescence. Theories of learning and personality, with research and case material covering major aspects of psychological development.

Profs. Bernheim, Hanks, and Nichols

All Quarters

50.131 Human Development and Learning II

4 Q.H.

Continuation of Human Development and Learning I. Significant aspects of adolescence; physical, social, and psychological factors as they influence adolescent behavior.

Profs. Gulo and Rosenthal

All Quarters

50.132 Creative Expression in Children

(Prereq. 50.121) 4 Q.H.

Study of creativity and the role which creative expression plays in the psychological development of the young child. Examination of various media (i.e., visual, dramatic, photographic, literary) and their use in the educational setting.

Prof. Bernheim

Spring and Summer Qtrs.

50.133 Educational Applications of Social Psychology (Prereq. 50.121 or 50.131) 4 Q.H.

Focus on theory and research in social psychology especially relevant to education. Areas covered are: prejudice in the classroom; the school as a setting for manifestation of authoritarian personality; attitude organization and change in an educational environment; the class and the clique as "small groups"; the expression of need for achievement in various school structures; and related topics.

Prof. Hanks

Spring and Summer Qtrs.

50.134 Mental Health in Teaching

(Prereq. 50.121 or 50.131) 4 Q.H.

Factors involved in the choice of teaching as a career, and of psychological and occupational

factors which contribute to teacher happiness and dissatisfaction, adjustment, and maladjustment. Examination of these factors is a background against which to consider: 1. what teachers can do to foster healthy personalities, 2. how to deal with psychological forces in the classroom, and 3. steps to strengthen the emotional development of the normal child.
Prof. Gulo Spring and Summer Qtrs.

50.135 Cross-Cultural Studies of Child Rearing and Education

(Prereq. 50.121 or 50.131) 4 Q.H.

Patterns of socialization in contrasting cultures, and possible and/or demonstrated resultants in areas of personal development of concern to educators. Readings are mainly ethnographic studies of child rearing and psychological investigations of children from contrasting backgrounds.

Prof. Herzog

Spring and Summer Qtrs.

50.136 Language and Cognition: Educational Implications

(Prereq. 50.121 or 50.131) 4 Q.H.

Development of language and thought in the child: concept learning, problem solving, and language acquisition. Particular consideration given to the implications of current research and theory in these areas for educational practice.

Prof. Nichols

Spring and Summer Qtrs.

50.137 Seminar in Adolescent Psychology

(Prereq. 50.131) 4 Q.H.

An in-depth examination of the motivational, intellectual, social, and emotional development of adolescents from the end of preadolescence to the beginning of young adulthood. Emphasis is also on current issues such as drug use, sexual behavior, and vocational problems.

Prof. Gulo

Spring and Summer Qtrs.

50.138 Seminar in Human Learning and Motivation

(Prereq. 50.121 or 50.131) 4 Q.H.

Survey and analysis of the literature on human learning and motivation. Emphasis on interaction between human learning and motivation in the developmental process and in the classroom.

Prof. Rosenthal

Spring and Summer Qtrs.

50.139 Seminar in Early Childhood Development

(Prereq. 50.121) 4 Q.H.

The theory and research regarding the cognitive, personality, and social development of children from birth to six years, with respect to their implications for early childhood education. Various existing programs examined and new directions explored.

Prof. Bernheim

All Quarters

50.141 Measurement and Evaluation

(Prereq. 51.135) 4 Q.H.

The fundamentals of measurement; the use of basic statistical concepts and techniques; evaluation of standardized and teacher-made tests.

Staff

All Quarters

50.152 Comparative Education

4 Q.H.

Education in other nations. Relationships with the political, economic, social, and cultural milieu in Western and Eastern Europe, the Near and Far East.

Prof. Baptiste

Fall, Winter, and Spring Qtrs.

50.153 Philosophy of Education

4 Q.H.

Objective is to help participants examine their own purposes in relation to those of the school as an institution. Philosophical writings (on topics such as the ethics of educational intervention, the delineation of educational concepts, the educational messages of long-range speculations and utopias, and normative assumptions underlying educational policies) and the practice of education in the class are the main materials. Dialogue is the main method.

Prof. Meier

Fall, Winter, and Spring Qtrs.

50.154 Current Issues in American Education

4 Q.H.

An analysis of the variety of educational issues confronting elementary and secondary teachers. Attempts will be made to place issues in a historical context, and to expose students

to a variety of educational programs in the Boston area that are palpable efforts to deal with the issues.

Profs. Baptiste and Meier

Fall, Winter, and Spring Qtrs.

50.161 Seminar in Group Process

4 Q.H.

A study of the structure, dynamics, and function of face-to-face groups leading to learning about goal achievement and task orientation. The course operates mainly by committee or group instrumentation. A serious student should gain an understanding of the function of informal relationships within formal organizations, the various roles within groups, peer relationships, superior-subordinate relationships, authority and intimacy, and the inclusion and exclusion processes. Also involved is the aspect of self-understanding.

Prof. Meier

Winter and Spring Qtrs.

50.163 Schools as Social Systems

(Prereq. 50.114 or equiv.) 4 Q.H.

An analysis of schools as sociocultural subsystems within the larger society. Functional interrelationship between student and school subcultures; status and role systems; and authority structures in American schools.

Prof. Brown

Winter and Spring Qtrs.

50.164 Class and Ethnic Relations in Education

(Prereq. 50.114 or equiv.) 4 Q.H.

The various ways in which the American class system and patterns of ethnic group relations have affected, and have been affected by, American education. The limitations and potential of educational institutions with respect to the resolution of intergroup conflicts and the establishment of equal educational opportunities.

Prof. Zalinger

Winter and Spring Qtrs.

50.165 Organization and Politics of School Systems

(Prereq. 50.114 or equiv.) 4 Q.H.

The political sociology of school systems in the U.S. An analysis of the power and authority structures in contemporary education. Who decides what and how? Who controls the system? How are the various interest groups organized? What are the mechanisms for conflict resolution? The relationship between professional and nonprofessional interest groups.

Prof. Brown

Winter and Spring Qtrs.

50.166 Teaching and the Human Service Professions

(Prereq. 50.114 or equiv.) 4 Q.H.

An analysis of responsibility for socialization in modern society, focusing on the inputs of teachers and other school personnel, various human service professions, and the family and informal peer groups. These topics are approached through sociological and historical materials concerning the development of selected school and human service professions, and by comparison of contemporary American practice with child-rearing arrangements in other modern nations.

Prof. Herzog

Winter and Spring Qtrs.

50.167 Education and Psychosocial Development

(Prereq. 50.114 or equiv.) 4 Q.H.

Theories and research on the socialization functions of education. The relative influence of early vs. post-childhood socialization; professional and adult socialization; the role of diverse educational experiences and institutions in personality development and change.

Profs. Durham and Zalinger

Winter and Spring Qtrs.

50.168 Education and Social Change

(Prereq. 50.114 or equiv.) 4 Q.H.

A sociological exploration of educational systems as independent and dependent variables in social change. Instances of planned educational change in various countries and their implications for contemporary American society.

Staff

Winter and Spring Qtrs.

Education—Instruction

51.124 Modern Mathematics Curricula

4 Q.H.

Mathematics curricula in junior and senior high schools, including experimental programs,

presented in their historical setting.

Prof. McLean

Spring Qtr.

51.131 Fundamentals of Arithmetic I

4 Q.H.

Techniques of teaching arithmetic so that underlying principles are stressed. Topics are selected to serve as a foundation in mathematics appropriate for any elementary program. Deductive and inductive reasoning, numeration systems, elementary concepts of set theory, whole numbers and rational numbers and their properties, decimal numerals, linear equations, and inequalities.

Prof. Clark

Fall and Winter Qtrs.

51.132 Fundamentals of Arithmetic II

(Prereq. 51.131) 4 Q.H.

Continuation of Fundamentals of Arithmetic I. Rate, ratio and percent, informal geometry, elementary theorems and proofs, similarity and trigonometry, area of volume, elements of spherical geometry.

Prof. Clark

Spring and Summer Qtrs.

51.135 Analysis of Teaching and Educational Process

(Prereq. 50.131) 4 Q.H.

The relationships that exist between instructional objectives and teaching behavior; applications of human development and learning concepts as they relate to subsequent specialized teaching methods and materials. Research results and promising theory are used to extend the prospective teacher's concepts of the teaching function.

Staff

Fall and Winter Qtrs.

51.139 Writing and the Teaching of Writing

(Prereq. 51.135) 4 Q.H.

A study of the logical and rhetorical bases of exposition and argumentative writing; the role of definition in exposition and argumentation; relationships of assumptions, assertions, and implications; the nature of proof in the sciences, social sciences, and the humanities; strategies of argumentation; the affective consequences of word choice and sentence structure.

Prof. Favat

Spring Qtr.

51.140 Methods and Materials of Teaching Modern Languages I

(Prereq. 51.135) 4 Q.H.

The most effective types of classroom activities, subject unit organization, assignments, examinations, and teaching aids used in modern language. The role of the language laboratory with its problems of selecting equipment, scheduling pupils, planning tapes and content of drill exercises, evaluating results, and coordinating its functions with conventional classroom instruction.

Prof. Petralila

Fall and Winter Qtrs.

51.141 Elementary Education Compendium I

(Prereq. 51.135) 4 Q.H.

The curriculum is analyzed on the basis of the overall objectives of the American elementary school. Students evaluate and organize units of work which are appropriate to the level at which they plan to teach. The integrated approach to learning is emphasized, but the integrated approach to science, social studies, and language arts subjects is given special attention.

Prof. Lee in charge

Fall and Winter Qtrs.

51.142 Elementary Education Compendium II

(Prereq. 51.141) 4 Q.H.

The objectives, activities, and methods of evaluation in the elementary school are continued, with special attention to the areas of music, art, and physical education.

Prof. Lee in charge

Spring and Summer Qtrs.

51.143 Methods and Materials of Teaching English

(Prereq. 51.135) 4 Q.H.

An introduction to the structure and functions of language as they apply to the teaching of English; curriculum and planning in English. The unit approach; specific techniques of teaching reading and literature, grammar and usage, written and oral composition, listening, spelling, vocabulary, and the use of mass media.

Prof. Favat

Fall and Winter Qtrs.

51.144 Methods and Materials of Teaching Modern Languages II

(Prereq. 51.140) 4 Q.H.

Continuation of Methods and Materials of Teaching Modern Languages I.

Prof. Petralia

Spring and Summer Qtrs.

51.145 Methods and Materials of Teaching Mathematics

(Prereq. 51.135) 4 Q.H.

Theory and practice of teaching secondary mathematics, including a discussion and evaluation of instructional problems. Lesson planning and presentations by individual students afford appropriate practice and serve as the medium of instruction.

Prof. McLean

Fall and Winter Qtrs.

51.147 Methods and Materials of Teaching the Sciences

(Prereq. 51.135) 4 Q.H.

The prospective science teacher is introduced to the following: the philosophies of science and their applicability in society and the secondary school; science curriculum development and application; and pertinent methods and materials in science education.

Prof. Miner

Fall and Winter Qtrs.

51.149 Methods and Materials of Teaching Social Studies

(Prereq. 51.135) 8 Q.H.

A field-oriented course conducted off campus in one or more schools of cooperating public school systems where College of Education students work with pupils of the school individually and in small groups. Techniques of planning, development of curriculum materials, utilization of audio-visual equipment, simulations, development and implementation of evaluation instruments, presentation of original materials in class.

Prof. Tedesco

Fall and Winter Qtrs.

51.151 Student Teaching and Seminar

(Prereq. formal acceptance into and completion of Advanced Professional sequence with minimum 2.0 Q.P.A., both overall and in teaching major) 8 Q.H.

Full-time participation in a university-arranged and supervised school program designed to provide opportunity for the analysis of learning and teaching and for the demonstration, evaluation, and development of teaching skills.

Education—Reading

54.126 Teaching Reading in Secondary Schools

4 Q.H.

For English and Social Studies majors in the College of Education who are preparing for teaching in the junior or senior high schools. Basically, the same approach and organization applies to this course as to the elementary level course. (One quarter)

Prof. Maguire

Spring Qtr.

54.135 Fundamentals of Reading I

6 Q.H.*

The basic, introductory course in developmental reading for prospective elementary teachers. In the first term the emphasis is on language and symbolic process as it relates to beginning reading. The word recognition and meanings growth areas are studied in detail, as are some methods and techniques of testing and grouping. An introduction to some reading books and materials, methods of teaching, and the psychology of learning to read. Tutorial work begins with students.

Prof. Howards in charge

Fall and Winter Qtrs.

54.136 Fundamentals of Reading II

(Prereq. 54.135) 6 Q.H.*

A continuation and extension of the first term. Study skills; speed and fluency growth areas. The tutorial work is extended and greater familiarity with books, materials, and methods achieved.

Prof. Howards in charge

Spring and Summer Qtrs.

54.141 Remedial Reading

(Prereq. 54.136) 4 Q.H.

For prospective teachers in the primary unit. This introductory course familiarizes the student

*Including lab.

with some of the most commonly known reading problems in the typical classroom as well as in the reading clinic; analysis and evaluation of the typical diagnoses of such problems; corrective programs. Tutorial work with a retarded reader, with each student keeping a log or journal of his work with a particular reading problem.

Prof. Burg

Fall and Winter Qtrs.

54.142 Linguistics and Reading

(Prereq. 54.136) 4 Q.H.

For elementary level teachers (primary unit). The major objective is to translate the knowledge gathered from structural and descriptive linguistics into useful classroom instruction, which includes not only reading instruction, but basic instruction in the related language skills. The contributions, particularly of such writers as Fries, Barnhart, Bloomfield, and LeFevre, are experimented with and analyzed.

Prof. Kaufman

Spring Qtr.

54.151 Children's Literature

(Prereq. 54.136) 4 Q.H.

For prospective teachers in the primary unit. A comprehensive survey and critical analysis of the books and materials available for basic reading instruction and for supplementary reading activities. After a massive review of the available literature for the children, especially in grades K-3, each student is responsible for developing some material of his own for trial with subjects. The ultimate goal is to make the student aware of what is available and how to use it most effectively in a reading program.

Prof. Buffone

Spring Qtr.

Education—Speech and Hearing—Special Education

55.121 Introduction to Special Education

4 Q.H.

An introductory survey course which emphasizes the characteristics and needs of exceptional children and youth. Recognition of exceptional children in the classroom, including the trainable and educable retarded, emotionally disturbed, social offender, brain-injured, speech-, hearing-, and language-impaired, the physically handicapped, the visually handicapped, and the gifted.

Fall and Winter Qtrs.

55.122 Introduction to Speech and Hearing Therapy

4 Q.H.

Normal language and speech development in children. Analysis of the most prevalent organic and functional communication disorders, with emphasis on identification techniques. Lectures, demonstrations, and 15 clock hours of observation in the University clinic.

Spring and Summer Qtrs.

55.124 Anatomy, Physiology, and Neurology of the Speech and Hearing Mechanism

4 Q.H.

Physiological and mechanical components of speech and hearing. The skeletal, muscular, and nervous systems. Lectures and laboratory demonstrations.

Spring and Summer Qtrs.

55.126 Communication Skills

4 Q.H.

The importance of effective communication in the teaching profession. Utilization of the knowledge of the scientific principles of voice production, with practice in effective vocal usage. Integration of communication skills with regular classroom curriculum. Lectures, exercises, demonstration, and observations.

Fall and Winter Qtrs.

55.131 Normal Development of Language and Speech

(Prereq. 55.122) 4 Q.H.

Analysis of theories related to concept formation, development, and utilization of symbols from birth to maturation. Foundations and developmental phases of language and speech. The significance of physiological, neurological, psychological, and intellectual factors affecting language and speech development. Case studies, lectures, demonstration, and

observations.

Prof. Ferullo

Fall and Winter Qtrs.

55.133 Introduction to Linguistics and Phonetics

(Prereq. 55.122) 4 Q.H.

Learning and applying the International Phonetic Alphabet. A consideration of articulated phonemes and allophones, sound change, structural and descriptive linguistics as applied to problems in communication. The nature of language. Lectures, demonstrations, and observations.

Mrs. West

Fall and Winter Qtrs.

55.134 Organic Speech Disorders

(Prereq. 55.124) 4 Q.H.

Etiology, diagnosis, and prognosis of non-neurological communication disorders; consideration of therapeutic procedures in cleft-palate and cleft-lip, and related maxillo-facial abnormalities; laryngectomy; and tongue-thrusting. Lectures, observations, and demonstrations.

Prof. Ferullo

Spring and Summer Qtrs.

55.141 Methods and Materials in Speech and Hearing and Articulation Disorders

(Prereq. 51.135) 4 Q.H.

Various materials and methods used in the correction of speech problems. The rationale of the corrective process; selection, preparation, and presentation of materials. Speech correction and improvement through an integrated approach.

Staff

Fall and Winter Qtrs.

55.142 Introduction to Audiology

(Prereq. 55.124) 4 Q.H.

The physics of sound, anatomy, physiology, and neurology of the ear. Basic techniques in audiometric testing. Lectures, demonstrations, and observations.

Spring and Summer Qtrs.

55.143 Diagnostic Techniques in Speech and Hearing

(Prereq. 55.134) 4 Q.H.

Diagnosis and therapy in communication disorders in children and adults; tests utilized in evaluation of individuals with language, speech, and hearing disorders. Demonstrations, case histories, and experience in the University clinic.

Fall and Winter Qtrs.

55.144 Clinical Practice in Speech and Hearing I

(Prereq. 55.131, 55.133) 4 Q.H.*

Practicum in language, speech, and hearing diagnosis and therapy in the University clinic. Students should reserve a block of hours for clinic practicum. A minimum of 100 hours.

Spring and Summer Qtrs.

55.145 Functional Speech Disorders

(Prereq. 55.124) 4 Q.H.

Etiology, diagnosis, and prognosis of communication disorders of nonorganic origins. Language and speech disorders and the psychodynamics of personality development. Lectures and demonstrations, case histories, and experience in the University clinic.

Prof. Ferullo

Fall and Winter Qtrs.

55.152 Speechreading and Auditory Training

Various speech-reading methods; an integrated approach to the treatment of hard-of-hearing individuals; auditory training techniques and materials.

Prof. Ferullo

Spring Qtr.

55.154 Introduction to Stuttering

(Prereq. 55.145) 4 Q.H.

A consideration of some of the major theories of stuttering. Diagnosis and therapy procedures. Lectures, demonstrations, and observations.

Staff

Spring Qtr.

55.155 Clinical Practice in Speech and Hearing II

(Prereq. 55.144 and 100 in University clinic) 4 Q.H.*

Practicum in language, speech, and hearing diagnosis in a medical and/or rehabilitation

*Including lab.

center; a multidisciplinary approach to the treatment of children and adults.

Mrs. Troutman

Fall and Winter Qtrs.

55.230 Introduction to Emotional Disturbances in Children

(Prereq. 55.121, 19.201 or equiv.) 4 Q.H.

An introduction to the etiology, dynamics, and diagnosis of emotional disturbance in children. Special attention is given to emotional blocks to learning.

Staff

Fall and Winter Qtrs.

55.237 Introduction to Learning Disabilities

(Prereq. 55.121) 4 Q.H.

An introduction to the learning problems of children with perceptual-motor handicaps, but who generally meet the criteria of normal intelligence.

Staff

Fall and Winter Qtrs.

55.240 Psychology of the Mentally Retarded

(Prereq. 55.121) 4 Q.H.

An analysis of the nature and needs of the retarded individual, with emphasis on characteristics of physical, mental, social, and emotional development. Implications of these characteristics for educational, social, and employment training programs are explored in conjunction with parental and community reactions and involvement. The positive ultimate role of the retarded as a successful citizen, employee, and homemaker is a major emphasis.

Staff

Spring and Summer Qtrs.

55.250 Introduction to Rehabilitation

(Prereq. 55.121) 4 Q.H.

An overview of and an orientation to the field of rehabilitation, including its historical development, psychological implications, and sociological dimensions.

Staff

Spring and Summer Qtrs.

Physical Education

Most courses are coeducational. Some courses for men and women will be offered separately where deemed advisable.

60.140 Analysis and Teaching of Physical Activities I

(Prereq. 60.131; women only) 3 Q.H.*

Analysis of performance and methods of teaching in the areas of gymnastics and racquet sports.

Staff

Fall Qtr.

60.141 Analysis and Teaching of Physical Activities II

(Prereq. 60.131; women only) 3 Q.H.*

Analysis of performance and methods of teaching in the areas of team sports (indoor) and aquatics.

Staff

Winter Qtr.

60.142 Analysis and Teaching of Physical Activities III

(Prereq. 60.132; women only) 3 Q.H.*

Analysis of performance and methods of teaching in the areas of field sports and dance.

Staff

Spring Qtr.

60.143 Winter Sports

1 Q.H.

Five-day resident session at North Conway, New Hampshire. Participation according to ability in classes of Hannes Schneider Ski School. Evening seminars in skiing theory and teaching methods.

Staff

Winter Qtr.

60.160 Instructional Technology

2 Q.H.

Survey of selection, evaluation, preparation, and production of audio-visual media, instructional television, and programmed learning. Some opportunity to work with related equipment.

Staff

Fall Qtr.

60.220 Program and Methods in Elementary School Physical Education Activities

(Prereq. 19.102, 50.121, 50.131; women only) 4 Q.H.

Philosophy, program-planning, and methods for teaching children; guided observation experiences with children in schools; individual teaching presentations and evaluations in basic motor skills, dance activities, games, gymnastics, and sports.

Staff

Winter Qtr.

60.230 Advanced Teaching and Analysis

(Prereq. 60.140, 60.141, 60.142; women only) 3 Q.H.*

Advanced study of teaching methods and analysis in one of the areas studied in Physical Education 60.140—42 and one individual sport.

Staff

Winter and Spring Qtrs.

61.212 Handball and Squash

(Prereq. men only) 1 Q.H.*

The skills and techniques involved in the teaching of handball and squash. Special emphasis on skills involved, rules, courtesies, and strategies in each sport.

Staff

Fall and Winter Qtrs.

61.220 Survey of Recreational Sports

(Prereq. men only) 1 Q.H.*

Recreational activities such as archery, deck tennis, table tennis, horseshoes. Emphasis on rules, teaching techniques, place in the program.

Staff

Spring and Summer Qtrs.

61.230 Secondary School Dance

1 Q.H.*

The techniques of dance instruction at the junior and senior high school levels.

Staff

Fall and Winter Qtrs.

61.237 Team Sports III

(Prereq. men only) 1 Q.H.*

Techniques of teaching soccer, speedball and softball; special emphasis placed on rules, courtesies, and strategies.

Staff

Spring and Summer Qtrs.

61.241 Advanced Wrestling

(Prereq. 61.240 or consent of instructor; men only) 2 Q.H.*

Advanced techniques in coaching wrestling at the senior high school and college levels; emphasis on fundamentals of a more advanced nature; care of athletes, officiating, conduct of meets.

Staff

Spring and Summer Qtrs.

61.242 Advanced Boxing

(Prereq. 61.240 or consent of instructor; men only) 2 Q.H.*

Advanced techniques in coaching boxing; emphasis on offensive and defensive techniques, rules, and officiating.

Staff

Spring and Summer Qtrs.

61.263 Methods and Materials in Physical Education

(Prereq. 61.236 or consent of instructor; men only) 4 Q.H.

Methods and materials to be used in curriculum development, class management, and teaching preparation for student teaching.

Staff

Fall and Winter Qtrs.

61.265 Advanced Football

(Prereq. 61.236 or consent of instructor; men only) 3 Q.H.*

Basic techniques in coaching football at the senior high school and college levels. Emphasis on individual and team play, offensive and defensive systems, role of head and assistant coaches, scouting, use of teaching aids, team management.

Staff

Spring and Summer Qtrs.

61.266 Advanced Basketball

(Prereq. 61.235 or consent of instructor; men only) 3 Q.H.*

Basic techniques at the senior high school and college levels. Emphasis on systems of offensive and defensive team play, scouting, use of teaching aids, team management.

Staff

Spring and Summer Qtrs.

61.267 Advanced Baseball

(Prereq. 61.235 or consent of instructor; men only) 3 Q.H.*

Basic techniques in coaching baseball at the senior high school and college levels. Emphasis

on individual and team play, role of head and assistant coaches, team management.

Staff Spring and Summer Qtrs.

61.268 Advanced Track (Prereq. 61.236 or consent of instructor; men only) 3 Q.H.*
Basic techniques of coaching track and field at the senior high school and college levels. Emphasis on care and training of athletes, practice schedules, coaching techniques, conduct of meets.

Staff Spring and Summer Qtrs.

61.280 Camp Leadership (Prereq. men only) 2 Q.H.*
Introduction to the procedures of organized camping and outdoor activities. Emphasis placed on camp skills, equipment, counseling, trip leadership, laboratory experiences.

Staff Spring and Summer Qtrs.

62.10A Beginning Swimming 1 Q.H.*
Instruction in basic swimming skills, with emphasis on personal water safety.

Staff All Quarters

62.10B Intermediate Swimming (Prereq. 62.10A or equivalent) 1 Q.H.*
Instruction in basic and advanced swimming skills, with emphasis on form and efficiency.

Staff All Quarters

62.10C Advanced Swimming (Prereq. 62.10B or equivalent) 1 Q.H.*
Instruction in advanced swimming skills with emphasis on form and efficiency.

Staff All Quarters

62.10D Diving (Prereq. 62.10A or equivalent) 1 Q.H.*
Instruction in basic one-meter and three-meter springboard diving in all five categories of dives.

Staff All Quarters

62.10E Competitive Swimming (Prereq. 62.10B or equivalent) 1 Q.H.*
Instruction in the four competitive strokes, starts, and turns, with emphasis on speed and conditioning.

Staff Winter and Summer Qtrs.

62.10F Synchronized Swimming (Prereq. 62.10B or equivalent) 1 Q.H.*
Instruction in basic synchronized swimming skills, with emphasis on stunts, rhythmic swimming, and choreography.

Staff Winter and Spring Qtrs.

62.10G Water Polo (Prereq. 62.10B or equivalent) 1 Q.H.*
Instruction in beginning water polo, with emphasis on personal skill, offensive and defensive team play.

Staff Fall and Spring Qtrs.

62.10J Survey of Aquatic Activities (Prereq. 62.10B or equivalent) 1 Q.H.*
Competitive swimming, diving, skin diving, synchronized swimming, and water polo, with emphasis on recreational values.

Staff All Quarters

62.10K Senior Life Saving (Prereq. 62.10B or equivalent) 1 Q.H.*
Instruction in life-saving skills, or techniques and theory. Red Cross Certification possible.

Staff All Quarters

62.10L Water Safety Instruction (Prereq. 62.10B, 62.10K) 1 Q.H.*
Instruction in techniques, theory and teaching methods in swimming and life-saving courses. Red Cross Certification possible.

Staff Spring Qtr.

62.10M Beginning Scuba (Prereq. 62.10B or equiv.) 1 Q.H.*
Instruction in basic skin diving and scuba diving skills, with emphasis on personal safety.

Staff All Quarters

*Including lab.

62.10P Canoeing

(Prereq. 62.10B or equiv.) 1 Q.H.*

Instruction in basic canoeing skills.

Staff

Summer and Fall Qtrs.

62.10Q Sailing

(Prereq. 62.10B or equiv.) 1 Q.H.*

Instruction in rowing and in basic sailing skills.

Staff

Summer and Fall Qtrs.

62.10S Advanced Beginning Swimming

1 Q.H.

Continuation of elementary swimming. Emphasis on basic stroke improvement and understanding and gaining confidence in deep water.

Staff

All Quarters

62.12A Beginning Folk and Square Dance

1 Q.H.*

Introduction to folk and square dance at the beginning and intermediate levels.

Staff

Fall Qtr.

62.12B Intermediate Folk and Square Dance

(Prereq. 62.12A or equiv.) 1 Q.H.*

Instruction in folk and square dance at the intermediate and advanced levels.

Staff

Winter and Spring Qtrs.

62.12C Ethnic Dance Forms

(Prereq. 62.12A or consent of instructor) 1 Q.H.*

A study of primitive, folk, and national dance forms.

Staff

Spring Qtr.

62.12E Beginning Modern Dance

1 Q.H.*

Introduction to modern dance technique and improvisation.

Staff

Fall and Winter Qtrs.

62.12F Intermediate Modern Dance

(Prereq. 62.12E or equiv.) 1 Q.H.*

Intermediate modern dance technique and improvisation.

Staff

Winter and Spring Qtrs.

62.12H Ballet I

1 Q.H.*

An introduction to the fundamental techniques and terminology of the classic ballet.

Staff

Fall Qtr.

62.12J Ballet II

(Prereq. 62.12H or equiv.) 1 Q.H.*

A continuation of 62.12H. Progression into the expressive and choreographic use of classic ballet techniques.

Staff

Winter Qtr.

62.12L Beginning Jazz Dance

1 Q.H.*

Introduction to several contemporary styles of jazz dance technique.

Staff

All Quarters

62.13P Beginning Gymnastics Orientation

1 Q.H.*

Development of knowledge and skill necessary for competent performance in the orientation skills of tumbling, trampoline, and vaulting at the beginning level. Coed.

62.13Q Beginning Men's Apparatus

(Prereq. 62.13P or equiv.; men only) 1 Q.H.*

Development of knowledge and skill for competent performance at the beginning level pommel horse, parallel bars, horizontal bars, and rings.

62.13R Beginning Women's Floor Exercise and Apparatus

(Prereq. 62.13P or equiv.; women only) 1 Q.H.*

Development of knowledge and skill for competent performance in Floor Exercise, and beginning bars and uneven parallel bars.

62.13S Intermediate Gymnastics

(Prereq. 62.13P and 62.13R or equiv.; women only) 1 Q.H.*

Development of skill and knowledge for competent performance at the intermediate level in the competitive areas for women, including floor exercise, vaulting, beam and uneven bars.

62.13T Intermediate Gymnastics (A)

(Prereq. 62.13P, 62.13Q and 62.13T or equiv.; men only) 1 Q.H.*

Development of skill and knowledge for competent performance at the intermediate level in three of the six competitive areas for men. This includes the choice of floor exercise, side horse vaulting, pommel horse, parallel bars, horizontal bars, or rings.

62.13U Intermediate Gymnastics (B)

(Prereq. 62.13P, 62.13Q and 62.13T or equiv.; men only) 1 Q.H.*

Development of skill and knowledge for competent performance at the intermediate level in three of the six competitive areas for men not chosen in Intermediate Gymnastics A.

62.14A Beginning Badminton

1 Q.H.*

Instruction in beginning badminton skills, rules, strategy, and care of equipment.

Staff

Spring and Summer Qtrs.

62.14B Beginning Squash Racquets

1 Q.H.*

Introduction to squash racquets at the beginning level; development of skills, rules strategy, and etiquette.

Staff

Fall and Winter Qtrs.

62.14C Beginning Tennis

1 Q.H.*

Instruction in beginning tennis skills, rules, strategy, and care of equipment.

Staff

Spring and Summer Qtrs.

62.14D Indoor Tennis

1 Q.H.*

Introduction to tennis at the beginning level through the use of paddles and racquets in modified game situations; development of skill, rules, strategy and etiquette. (Does not fulfill skill requirement in Physical Education major curriculum.)

Staff

All Quarters

62.14E Intermediate/Advanced Badminton

(Prereq. 62.14A or equiv.) 1 Q.H.*

Instruction in badminton, including intermediate and advanced skills, with emphasis on singles and doubles match play and strategy.

Staff

Spring Qtr.

62.14G Intermediate/Advanced Tennis

(Prereq. 62.14C or equivalent) 1 Q.H.*

Instruction in tennis, including intermediate and advanced skills, with emphasis on singles and doubles match play and strategy.

Staff

Summer Qtr.

62.15A Fundamentals of Movement

1 Q.H.*

Understanding and performance of basic motor and sports. Efficient and effective movement for sports activities and daily living is stressed.

Staff

Fall Qtr.

62.15B Beginning Archery

1 Q.H.*

Selected skills in target shooting and practical experience in archery games, novelty events, and conduct of tournaments.

Staff

All Quarters

62.15D Beginning Bowling

1 Q.H.*

Development of knowledge and skill necessary for competent performance in bowling at the beginning level. Practice provided in nearby commercial alleys. *Lab. fee.*

Staff

All Quarters

62.15F Beginning Golf

1 Q.H.*

Instruction in fundamental golf skills, knowledge of clubs and their uses, and rules and etiquette. Indoor only during winter season.

Staff

All Quarters

62.15G Intermediate/Advanced Golf

(Prereq. 62.15F or equiv.) 1 Q.H.*

Instruction in golf at the intermediate-advanced level. Emphasis is placed on course play,

*Including lab.

rules, and selection of equipment. *Lab. fee.*

Staff

Fall and Summer Qtrs.

62.15H Beginning Judo

1 Q.H.*

A survey of the principles and fundamental skills of judo. Instruction is geared to the beginning and intermediate levels.

Staff

All Quarters

62.15J Beginning Boxing

(Prereq. men only) 1 Q.H.*

Instruction in boxing at the beginning level; emphasis on offensive and defensive techniques, scoring, training, and officiating.

Staff

All Quarters

62.15K Beginning Wrestling

(Prereq. men only) 1 Q.H.*

Beginning level of instruction in basic wrestling maneuvers. Stress on fundamental breakdowns, escapes, takedown, rides, and pinning combinations. Rules and scoring procedures discussed and modified matches conducted.

Staff

All Quarters

62.15L Intermediate/Advanced Wrestling (Prereq. 62.15K or equiv.; men only) 1 Q.H.*

Intermediate-advanced levels of instruction presented. Emphasis is placed on training and training principles; selected skills not covered in beginning wrestling, scrimmages, and officiating.

Staff

Fall and Winter Qtrs.

62.15M Beginning Fencing

1 Q.H.*

Instruction in basic foil fencing, including introduction to competition.

Staff

Spring Qtr.

62.15N Intermediate/Advanced Foil Fencing

(Prereq. 62.15M or equiv.; women only) 1 Q.H.*

Instruction in intermediate-advanced techniques of foil fencing, with special emphasis on competition, judging, and the use of electrical equipment.

Staff

Spring Qtr.

62.15P Intermediate/Advanced Fencing (3 weapons)

(Prereq. 62.15M or equiv.; men only) 1 Q.H.*

Instruction in intermediate-advanced techniques of foil, epee, and sabre fencing, with special emphasis on competition, judging, and the use of electrical equipment.

Staff

Spring Qtr.

62.16B Weight Training

(Prereq. men only) 1 Q.H.*

Introduction to the principles and use of resistive exercises; isotonic exercise (weights), isometric, and the appropriateness of each.

Staff

Fall, Winter, and Spring Qtrs.

62.16C Physical Conditioning

1 Q.H.*

Instruction in basic exercise and conditioning techniques. Special emphasis on individual needs for exercise and activity. The relationships of diet and relaxation to exercise are discussed.

Staff

All Quarters

62.16D Exercise and Figure Control

(Prereq. women only) 1 Q.H.*

Instruction and guidance in contouring, fitness, and poise. (Does not fulfill skill requirement in Physical Education major curriculum.)

Staff

All Quarters

62.16E Adapted Physical Education I

(Prereq. medical consent) 1 Q.H.*

A course designed for students whose physical activity program must be modified for medical reasons. Personalized instruction and programs are provided according to individual needs.

Staff

All Quarters

62.16G Principles of Physical Activities and Conditioning

2 Q.H.*

Survey of the physiological principles, concepts, and applications of skills concerned with individual or group fitness programs. (Not open to Physical Education majors.)

Staff

All Quarters

62.16H Ski Conditioning

1 Q.H.*

Instruction in skills and techniques for the development of strength, endurance, flexibility, and efficient use of body for skiing. (Does not fulfill skill requirement in Physical Education major curriculum.)

Staff

Fall and Winter Qtrs.

62.16J Beginning Skiing and Winter Sports

2 Q.H.*

Instruction in fundamental techniques of skiing, skating, and tobogganing. *Lab. fee.*

Staff

Winter Qtr.

62.16K Intermediate/Advanced Skiing and Winter Sports

(Prereq. 62.16J or equiv.) 2 Q.H.*

Instruction in skiing and skating at the intermediate-advanced level. Emphasis placed on skills, teaching, techniques, and safety procedures. *Lab. fee.*

Staff

Winter Qtr.

62.16L Beginning Track and Field

1 Q.H.*

Instruction in the fundamental skills in the various track and field events.

Staff

Spring Qtr.

62.16M Intermediate/Advanced Track and Field

(Prereq. 62.16L or equiv.) 1 Q.H.*

Instruction in intermediate-advanced techniques in track and field events. Emphasis is placed on improvement of individual skills; techniques of officiating are discussed.

Staff

Spring and Summer Qtrs.

62.16P Beginning Handball

(Prereq. men only) 1 Q.H.*

Development of knowledge and skills necessary for competent performance in handball at the beginning level.

Staff

Fall and Winter Qtrs.

62.16Q Intermediate/Advanced Handball

(Prereq. 62.16P or equiv.; men only) 1 Q.H.*

Development of knowledge and skills necessary for competent performance in handball at the intermediate to advanced levels.

Staff

Winter Qtr.

62.17C Beginning Basketball

1 Q.H.*

Development of knowledge and skills necessary for performance in basketball at the beginning level.

Staff

Fall and Winter Qtrs.

62.17D Intermediate/Advanced Basketball

(Prereq. 62.17C or equiv.) 1 Q.H.*

Development of knowledge and skills necessary for performance in basketball at the intermediate to advanced levels.

Staff

Fall and Winter Qtrs.

62.17F Beginning Ice Hockey

(Prereq. consent of instructor) 1 Q.H.*

Development of knowledge and skills necessary for performance in ice hockey at the beginning levels. Candidates must be able to skate forward and backward and cut right and left for admission.

Staff

Fall and Winter Qtrs.

62.17G Intermediate/Advanced Ice Hockey

(Prereq. 62.17F or equiv.; men only) 1 Q.H.*

Development of knowledge and skills necessary for performance in ice hockey at the intermediate to advanced levels.

Staff

Fall and Winter Qtrs.

*Including lab.

- 62.17J Beginning Volleyball** 1 Q.H.*
Development of knowledge and skill for performance in volleyball at the beginning level.
Staff Fall and Winter Qtrs.
- 62.17K Intermediate/Advanced Volleyball** (Prereq. 62.17J or equiv.) 1 Q.H.*
Development of knowledge and skill for performance in volleyball at the intermediate to advanced levels.
Staff Fall and Winter Qtrs.
- 62.17L Beginning Field Hockey** (Prereq. women only) 1 Q.H.*
Development of knowledge and skill for competent performance in field hockey at the beginning level.
Staff Fall and Winter Qtrs.
- 62.17M Intermediate Field Hockey** (Prereq. 62.17L or equiv.; women only) 1 Q.H.*
Development of knowledge and skill for competent performance in field hockey at the intermediate to advanced levels.
Staff Fall and Winter Qtrs.
- 62.17N Flag Football** (Prereq. men only) 1 Q.H.*
Development of fundamentals of football through noncontact work at the beginning level.
Position play, passing, catching, running.
Staff Fall and Winter Qtrs.
- 62.17P Beginning Football** (Prereq. men only) 1 Q.H.*
Development of fundamental football skills and knowledge to the beginning level of competence.
Staff Fall and Winter Qtrs.
- 62.17Q Intermediate/Advanced Football** (Prereq. 62.17P or equiv.; men only) 1 Q.H.*
Development of football knowledge and skill necessary for competent performance in football at the intermediate to advanced levels.
Staff Fall and Winter Qtrs.
- 62.18C Beginning Softball** 1 Q.H.*
Development of knowledge and skill necessary for competent performance in softball at the beginning level.
Staff Spring and Summer Qtrs.
- 62.18D Intermediate/Advanced Softball** (Prereq. 62.18C; women only) 1 Q.H.*
Development of knowledge and skill necessary for competent performance in softball at the intermediate to advanced level.
Staff Spring and Summer Qtrs.
- 62.18E Baseball** (Prereq. 62.18C or equivalent; men only) 1 Q.H.*
Development of knowledge and skill necessary for competent performance in baseball at the intermediate to advanced levels.
Staff Spring and Summer Qtrs.
- 62.18G Beginning Lacrosse** (Prereq. women only) 1 Q.H.*
Development of knowledge and skill necessary for competent performance in lacrosse at the beginning level.
Staff Spring and Summer Qtrs.
- 62.18H Intermediate/Advanced Lacrosse** (Prereq. 62.18G or equiv.; women only) 1 Q.H.*
Development of knowledge and skill necessary for competent performance in lacrosse at the intermediate to advanced levels.
Staff Spring and Summer Qtrs.
- 62.18J Beginning Lacrosse** (Prereq. men only) 1 Q.H.*
Development of knowledge and skill necessary for competent performance in lacrosse at the

beginning level.

Staff

Spring and Summer Qtrs.

62.18K Intermediate/Advanced Lacrosse (Prereq. 62.18J or equiv.; men only) 1 Q.H.*

Development of knowledge and skill necessary for competent performance in lacrosse at the intermediate to advanced levels.

Staff

Spring and Summer Qtrs.

62.18M Beginning Soccer

(Prereq. women only) 1 Q.H.*

Development of knowledge and skill necessary for competent performance in soccer at the beginning level.

Staff

Spring and Summer Qtrs.

62.18N Intermediate/Advanced Soccer (Prereq. 62.18M or equiv.; women only) 1 Q.H.*

Development of knowledge and skill necessary for competent performance in soccer at the intermediate to advanced levels.

Staff

Spring and Summer Qtrs.

62.18Q Beginning Soccer

(Prereq. men only) 1 Q.H.*

Development of knowledge and skill necessary for competent performance in soccer at the beginning level.

Staff

Spring and Summer Qtrs.

62.18R Intermediate/Advanced Soccer (Prereq. 62.18Q or equiv.; men only) 1 Q.H.*

Development of knowledge and skill necessary for competent performance in soccer at the intermediate to advanced levels.

Staff

Spring and Summer Qtrs.

62.18T Selected Field Sports

(Prereq. women only) 1 Q.H.*

Development of knowledge and skill in speedball, speedaway, and flag football.

Staff

Spring and Summer Qtrs.

62.18V Selected Field Sports

(Prereq. men only) 1 Q.H.*

Development of knowledge and skill in speedball and speedaway.

Staff

Spring and Summer Qtrs.

62.19A Early Childhood Motor Skill Development

2 Q.H.*

A study of the development of fundamental motor patterns (run, catch, kick, strike, jump, throw) from age 0 to 10 years, including perceptual motor organizations of vision, audition, and proprioception.

Staff

Fall and Winter Qtrs.

62.19B Games and Activities for Children

2 Q.H.*

Introduction to simple ball games, running and tag games, self-testing activities, movement exploration, and rhythms appropriate for children. Course content appropriate for future parents, teachers, and youth leaders.

Staff

Fall and Winter Qtrs.

62.19D The Spectator and Sports (Pass/Fail)

1 Q.H.

Instruction in the understanding for enjoyment as a spectator of such sports as football, basketball, ice hockey.

Staff

All Quarters

62.19G Perceptual Motor Training Programs

2 Q.H.*

An introduction to the role motor activities play in enhancing perceptual development. An examination of some current training programs: Frostig, Kephart, Doman-Delacato, Winter-Haven.

Staff

Spring Qtr.

62.201 Human Movement

4 Q.H.*

An introduction to the nature and role of human movement and the analysis of skillful

*Including lab.

movement performance through participation and observation. Introduction to the objectives, literature, and organization of the profession of physical education.

Staff Fall Qtr.

62.203 Practicum in Group Dynamics (Prereq. 62.201) 4 Q.H.

A three-week residence group living experience at the Warren Center. An introduction in group dynamics through selected activities, discussion, living and working together.

Staff Spring Qtr.

62.204 Psychology of Sport (Prereq. consent of instructor) 2 Q.H.

The psychological analysis of behavioral patterns and interactions in individual and team sports; includes personality and motivation, competition and sportsmanship, the role of spectators.

Staff Spring Qtr.

62.206 First Aid 2 Q.H.*

First Aid procedures recommended for the home, school, and community. Emphasis on practices endorsed by the American Red Cross.

Staff Spring Qtr.

62.208 Sociology of Sport and Dance (Prereq. consent of instructor) 2 Q.H.

The study of sport and dance as a social institution, including theories explaining the role of each in contemporary society, and the part of each in evolving societies.

Staff Spring and Summer Qtrs.

62.210 History and Principles of Physical Education 4 Q.H.

Preview of history of physical education; the place and function of physical education in society; identification of principles for development of sound programs.

Staff Fall and Winter Qtrs.

62.212 Theory of Coaching (Prereq. consent of instructor) 2 Q.H.

An analysis of learning principles, sociology, and psychology as applied to the coaching of individual, dual, and team sports. Techniques and standards of squad recruitment, organization, leadership, and coaching ethics are presented.

Staff Fall and Winter Qtrs.

62.215 Observation of Student Behavior 2 Q.H.*

The growth and development of elementary children and adolescents in physical education through direct observations and laboratory work with children.

Staff Spring Qtr.

62.217 Theory of Play 2 Q.H.

The nature of play and a study of cross-cultural patterns of play. An investigation of selected theories of play, including Huizinga, Caillois, Sutton-Smith, and Lee.

Staff Fall and Winter Qtrs.

62.218 Elementary School Activities I (Prereq. 50.121) 4 Q.H.*

The development of knowledge and skill beyond the advanced beginning level in the following activities for elementary school children: dance, gymnastics, movement education, low organization games, lead-up games, and aquatics. Analysis of elementary school children's performance and appropriate teaching techniques for the elementary school are observed and applied through observations and laboratory experience.

Staff Spring and Summer Qtrs.

62.221 Perceptual-Motor Learning and Development (Prereq. 50.121) 3 Q.H.

Interrelationships of movement behavior and perceptual-motor organizations of vision, audition, proprioception, and psycho-social effects of perception. A brief overview of major theories of learning as they apply to learning motor skills.

Staff Fall and Winter Qtrs.

*Including lab.

62.24A Coaching Competitive Swimming

(Prereq. 62.10B or consent of instructor) 2 Q.H.*

Instruction in the techniques, theory, and coaching methods of competitive swimming and diving.

Staff

Winter Qtr.

62.24B Swimming Analysis

(Prereq. 62.10B or consent of instructor) 2 Q.H.*

Instruction in theory, analysis techniques, and teaching methods in swimming.

Staff

All Quarters

62.24C Smallcraft Analysis

(Prereq. 62.10Q) 2 Q.H.*

Instruction in techniques, theory, and teaching methods of small craft classes. Red Cross certification possible.

Staff

Summer Qtr.

62.24E Analysis and Coaching of Men's Gymnastics

(Prereq. 62.13T) 2 Q.H.*

Skill analysis and coaching of men's gymnastics, with emphasis on appropriate teaching methods, new trends, and judging.

Staff

Fall and Winter Qtrs.

62.24F Analysis and Coaching of Women's Gymnastics

(Prereq. 62.13S) 2 Q.H.*

Skill analysis and coaching of women's gymnastics, with emphasis on appropriate teaching methods and new trends.

Staff

Fall and Winter Qtrs.

62.24G Advanced Analysis and Judging of Women's Gymnastics

(Prereq. 62.13P or R) 2 Q.H.*

Advanced skill analysis techniques and instruction in judging women's gymnastics leading toward a judging certification.

Staff

Winter and Spring Qtrs.

62.24H Analysis and Coaching of Badminton

(Prereq. 62.14E) 2 Q.H.*

Analysis of performance and methods of teaching and coaching in badminton.

Staff

Spring and Summer Qtrs.

62.24J Analysis and Coaching of Tennis

(Prereq. 62.14G) 2Q.H.*

Analysis of performance and methods of teaching and coaching in tennis.

Staff

Spring and Summer Qtrs.

62.24K Analysis and Coaching of Fencing

(Prereq. 62.15N or 62.15P) 2 Q.H.*

Advanced skill analysis and coaching of fencing. Special emphasis on current research and teaching methods of fencing.

Staff

Winter and Spring Qtrs.

62.24L Analysis and Coaching of Golf

(Prereq. 62.15G or equivalent) 2 Q.H.*

Advanced skill analysis and coaching of golf. Special emphasis on course play and teaching methods. *Lab. fee.*

Staff

Fall, Spring, and Summer Qtrs.

62.24M Analysis and Coaching of Track and Field

(Prereq. 62.16M or equiv.) 2 Q.H.*

Advanced skill analysis and coaching of all track and field skills. Special emphasis placed on the analysis of common movement patterns, teaching methods, and coaching techniques for the individual performer.

Staff

Spring and Summer Qtrs.

62.24N Analysis and Coaching of Wrestling (Prereq. 62.15L or equiv.; men only) 2 Q.H.*

Analysis of performance and techniques of teaching selected wrestling skills are covered in detail. Application of research to methodology is stressed.

Staff

Fall and Winter Qtrs.

62.24P Analysis and Coaching of Baseball

(Prereq. 62.18E) 2 Q.H.*

The basic techniques and responsibilities of coaching interscholastic and intercollegiate

*Including lab.

baseball; to include advanced skill analysis, position and team play, conditioning, practice organization, and team management.

Staff Fall and Spring Qtrs.

62.24Q Analysis and Coaching of Basketball

(Prereq. 62.17C) 2 Q.H.*

The basic techniques and responsibilities of coaching interscholastic and intercollegiate basketball; to include advanced skill analysis, position and team play, conditioning, practice organization, and team management.

Staff Fall and Winter Qtrs.

62.24R Analysis and Coaching of Field Hockey

(Prereq. 62.17K; women only) 2 Q.H.*

The basic techniques and responsibilities of coaching intramural, interscholastic, and intercollegiate field hockey; to include advanced skill analysis, position, and team play, conditioning, practice organization, and team management.

Staff Fall and Spring Qtrs.

62.24S Analysis and Coaching of Football

(Prereq. 62.17Q; men only) 2 Q.H.*

The basic techniques and responsibilities of coaching interscholastic and intercollegiate football; to include advanced skill analysis, team conditioning, offensive and defensive systems, practice organization, team management, and coaching staff organization.

Staff Fall and Spring Qtrs.

62.24U Analysis and Coaching of Ice Hockey

(Prereq. 62.17G; men only) 2 Q.H.*

The basic techniques and responsibilities of coaching interscholastic and intercollegiate ice hockey; to include advanced skill analysis, position and team play, conditioning, practice organization, and team management.

Staff Winter Qtr.

62.24V Analysis and Coaching of Lacrosse

(Prereq. 62.18A or 62.18K) 2 Q.H.*

The basic techniques and responsibilities of coaching intramural, interscholastic, and intercollegiate lacrosse; to include advanced skill analysis, position and team play, conditioning, practice organization, and team management.

Staff Spring and Summer Qtrs.

62.24W Analysis and Coaching of Soccer

(Prereq. 62.18N or 62.18R) 2 Q.H.*

The basic techniques and responsibilities of coaching intramural, interscholastic, and intercollegiate soccer; to include advanced skill analysis, position and team play, conditioning, practice organization, and team management.

Staff Spring and Summer Qtrs.

62.24X Analysis and Coaching of Softball

(Prereq. 62.18D; women only) 2 Q.H.*

The basic techniques and responsibilities of coaching intramural, interscholastic, and intercollegiate softball; to include advanced skill analysis, management.

Staff Spring and Summer Qtrs.

62.24Y Analysis and Coaching of Volleyball

(Prereq. 62.17J) 2 Q.H.*

The basic techniques and responsibilities of coaching intramural, interscholastic, and intercollegiate volleyball; to include advanced skill analysis, position and team play, conditioning, practice organization, and team management.

Staff Fall and Winter Qtrs.

62.249 Physical Science Foundations

3 Q.H.*

A treatment of basic concepts and fundamentals of chemistry and physics as applied to human physiology and movement.

Staff Spring Qtr.

62.250 Anatomy and Physiology I

4 Q.H.*

Gross anatomy and physiology of the human skeletal, joint, and muscular systems.

Staff Fall and Winter Qtrs.

62.251 Anatomy and Physiology II

(Prereq. 62.250 or consent of instructor) 4 Q.H.*

Gross anatomy and physiology of the human nervous and circulatory systems.

Staff Spring and Summer Qtrs.

- 62.252 Anatomy and Physiology III** (Prereq. 62.251 or consent of instructor) 4 Q.H.*
Gross anatomy and physiology of the human endocrine, respiratory, digestive, and urinary systems.
Staff Fall and Winter Qtrs.
- 62.253 Kinesiology** (Prereq. 62.250 or equiv.) 4 Q.H.*
Science of human motion and anatomic and mechanical principles as they relate to an understanding of skillful, efficient, and purposeful human motion. Introduction to cinematographic analysis.
Staff Fall, Winter, and Spring Qtrs.
- 62.254 Exercise Physiology** (Prereq. 62.253) 4 Q.H.*
Study of the immediate and long-range effects of exercise upon the human body, with emphasis on muscles, circulation, respiration, and metabolism; the scientific foundations of physical fitness; survey of related research.
Staff Fall, Winter, and Summer Qtrs.
- 62.255 Adapted Physical Education** (Prereq. 62.252 or equiv.) 4 Q.H.*
Study of disabilities which prevent participation in unrestricted physical education programs. Selection and modification of physical activities to meet individual needs.
Staff Fall, Winter, and Summer Qtrs.
- 62.256 Athletic Training and Conditioning** 3 Q.H.*
The training and conditioning procedures in athletic programs; special emphasis on the prevention of athletic injuries; role of the trainer, athlete, coach, and health service.
Staff Fall, Winter, and Summer Qtrs.
- 62.257 Advanced Athletic Training** (Prereq. 62.256) 4 Q.H.*
The advanced preparation and utilization of programs of conditioning and administration for prevention and care of injuries associated with competitive athletics.
Staff Fall and Winter Qtrs.
- 62.260 Measurement and Evaluation** 4 Q.H.
Construction, use, selection, and interpretation of evaluative tools applicable to physical education; elementary statistical methods.
Staff Fall and Winter Qtrs.
- 62.270 Administration of Physical Education** (Prereq. 62.210) 4 Q.H.
The organization and administration of programs in physical education, with emphasis on the elementary and secondary school program.
Staff Spring Qtr.
- 62.273 Sports Officiating** (Prereq. women only) 2 Q.H.*
Theory, practice, and techniques of officiating. (choices of: basketball, volleyball, softball, soccer, field hockey, lacrosse).
Staff All Quarters
- 62.274 Sports Officiating** (Prereq. women only) 2 Q.H.
Theory, practice, and techniques of officiating (choices of: basketball, volleyball, softball soccer, field hockey, lacrosse).
Staff All Quarters
- 62.275 Critical Teaching Skills** 3 Q.H.
Experience using the taxonomies of educational objectives to write, conduct, and evaluate educational and behavioral objectives. Analysis of direct and indirect, verbal and nonverbal teaching behavior for classroom and activity teaching to be studied by micro-teaching, simulation, and interaction analysis techniques.
Staff Fall and Winter Qtrs.
- 62.277 Outdoor Teaching Lab** 2 Q.H.
A three-week resident summer practicum at the Warren Center. Provides opportunities for

assumption of counseling, teaching, and leadership roles in special camp programs, land sports, nature, pioneering, arts and crafts, and aquatics. Youngsters of various ages from the Boston area are assigned in residence as subject campers.

Staff Summer Qtr.

62.279 College Teaching Experience (Pass/Fail)

(Prereq. seniors with consent of instructor) 1 Q.H.*

Experience in teaching physical education at the college level. Achieved by assisting and teaching in University classes supervised by a member of the college faculty.

Staff All Quarters

62.280 Curriculum Development

(Prereq. 62.275 or consent of instructor) 3 Q.H.

Basic foundations of curriculum development stressing fundamental principles and guides to curriculum organization, format, and evaluation. Survey of existing curricula and the development of an understanding of current curriculum trends.

Staff Spring Qtr.

62.282 Supervised Student Teaching

12 Q.H.

Assignment to public school(s) for observation and practice teaching under the guidance of a cooperating teacher and a college supervisor. Association with the main duties assumed by physical education teachers, including coaching and/or intramural organization and supervision. Individual conferences and seminars.

Staff Fall and Winter Qtrs.

62.283 Modern Dance Composition

(Prereq. 62.12G or consent of instructor) 3 Q.H.*

An analysis of dance composition, with practice in choreography for solo, duet, and trio.

Staff Spring Qtr.

62.284 Dance History and Philosophy

4 Q.H.

A survey of dance from ancient times to the present. Consideration of dance as an art form in relation to other art forms and of dance as an educational discipline.

Staff Spring Qtr.

62.286 Dance: Choreography and Production

4 Q.H.*

Choreography for trio, quartet, and large groups based upon the projection of an idea or mood. Theory and practice in the staging of student choreography, including lighting, costuming, scenery, and makeup.

Staff Winter Qtr.

62.288 Recreational Dance

(Prereq. 62.12B or equiv.) 2 Q.H.*

Theory and practice of the methods and materials in the teaching of recreational dance forms at the primary and secondary levels.

Staff Spring Qtr.

62.289 Creative Dance I

(Prereq. 62.12F or equiv.) 2 Q.H.*

Theory and practice of methods and materials in the teaching of creative dance to elementary school children. Examination of the aims and responsibilities of dance education at the primary level.

Staff All Quarters

62.290 Creative Dance II

(Prereq. 62.12F or equiv.) 2 Q.H.*

Theory and practice of methods and materials in the teaching of creative dance to secondary school children. Examination of the aims and responsibilities of dance education at the secondary level.

Staff All Quarters

62.291, 62.292, 62.293 Special Problems

(Prereq. consent of Dept. chairman) 2, 3, or 4 Q.H.

Independent investigation of physical education in an area of each student's interests. The investigation will be supervised by an appointed faculty member and will culminate in a formal written report.

Staff All Quarters

Recreation Education

63.120 Orientation to Recreation

1 Q. H.

A general orientation to the entire field of recreation and its role in society. Exposure to background, goals, philosophy, leadership, and programs in various settings. Orientation to the curriculum, the three-track system, and career opportunities.

Prof. Robinson

Fall Qtr.

63.121 Recreation Skills I

3 Q.H.*

Skill development, participation, and leadership in the following selected recreational activities: social recreation, volleyball, and badminton and music (introduction to guitar).

Prof. Hache' and Ms. Dawson

Fall Qtr.

63.122 Recreation Skills II

4 Q.H.*

Skill development, appreciation, participation, and leadership in tumbling and gymnastics, folk dance, music (introduction to guitar), and basic Red Cross swimming.

Prof. Hache and Ms. Dawson

Winter Qtr.

63.123 Recreation Skills III

4 Q.H.*

Development of leadership skill in social recreation activities: music, folk dance, games, and party program planning, including leadership experience with groups. Counselor education, philosophy, and leadership methods in camping. Red Cross life saving course.

Prof. Hache' and Ms. Dawson

Spring Qtr.

63.125 Outdoor Education and Camp Leadership

4 Q.H.

A two-week resident summer session at Warren Center: includes natural science, aquatics, overnight camping, Indian lore, ACA campcraft certification, leadership in special camp programs, outdoor sports, and small craft training.

Prof. Eliopoulos and Staff

Summer Qtr.

63.126 Outdoor Education I

3 Q.H.*

Interpretation of natural science and ecology. Emphasis on the development of personal skills through laboratory, field trips, lectures, and learning experiences in the out-of-doors.

Prof. Jeffrey and Staff

Fall and Winter Qtr.

63.127 Outdoor Education II

3 Q.H.*

Emphasis in developing understanding, interest, and field biology skills for ecology, conservation, and recreation.

Ms. Dawson

Spring and Summer Qtr.

63.128 Survey of Outdoor Recreation and Park Facilities

3 Q.H.

Fundamental management and administration concepts for a wide variety of outdoor areas and facilities such as parks, beaches, ice rinks, marinas, and camps.

Ms. Dawson

Spring and Winter Qtrs.

63.129 School Camping - Organization and Administration

3 Q.H.

Administration and leadership in school outdoor education and conservation programs in the natural environment. Field trips and laboratory include experience with school-age groups.

Prof. Jeffrey and Staff

Spring Qtr.

63.133 Recreation Skills IV

3 Q.H.*

Development of skills and teaching techniques in both men's and women's basketball. Techniques of teaching volleyball and badminton. Survey of recreational swimming skills, including participation. Techniques of leadership in aquatics games, competitive swimming, diving, skin diving, and synchronized swimming.

Ms. Dawson

Fall and Winter Qtrs.

63.134 Recreation Skills V

3 Q.H.

Techniques of teaching tennis and gymnastics, Red Cross standard and advanced first aid.

Ms. Dawson

Spring and Winter Qtrs.

*Including lab.

63.135 Social Recreation

2 Q.H.

Techniques of leadership, participation, and planning for recreation in social settings for all ages and typical and atypical groups: parties, programs, special events. Repertoire: mixers, dances, games, crafts, and music activities.

Prof. Eliopoulos

Spring Qtr.

63.143 Winter Sports

1 Q.H.

Five-day resident session. Instruction and practice in Alpine and Nordic skiing (downhill and touring), snow shoeing, winter mountain hiking, winter camping skills; optional overnight campout as well as environmental observations in the winter season. Fee charged for room and board. Equipment rented as needed.

Prof. Eliopoulos

Winter Qtr.

63.146 Camp Administration

3 Q.H.

Major problems involved in the establishment and operation of organized camps, including school, summer, and day camps. Selection of camp sites: sanitation, program, schedule, training personnel, finances, good management, and promotion.

Prof. Jeffrey

Fall and Winter Qtr.

63.147 Outdoor Education for Handicapped

3 Q.H.

Technical training and experience with atypical individuals. Recreation and education for exceptional and handicapped age groups.

Prof. Sayed

Spring Qtr.

63.148 Introduction to Mountaineering

4 Q.H.

All aspects of mountaineering, exposing students to the physical, emotional, and intellectual challenges afforded by technical mountaineering. An interdisciplinary study drawing upon social, physical, and natural sciences: i.e., physical, political and economic geography, glaciology, meteorology, structural geology, physiology, and social psychology. Basic skills are developed in friction and technical climbing, route finding, navigation, expedition planning, and wilderness living. The course includes a technical rock-climbing laboratory, and a two-day mini-expedition in the Northern Presidential Range.

Not offered 1973-74

63.150 Anatomy and Physiology I

3 Q.H.*

Gross anatomy and physiology of the human skeletal, articular, muscular, and nervous systems. Implications for recreation programs.

Prof. Sayed

Fall and Winter Qtrs.

63.151 Anatomy and Physiology II

3 Q.H.*

Gross anatomy and physiology of the human endocrine, circulatory, respiratory, digestive, and urinary systems. Implications for recreation programs.

Prof. Sayed

Spring and Summer Qtrs.

63.160 Recreation Resources

3 Q.H.

A study of practical use by recreation professionals of audiovisual, instructional, and computer technology.

Prof. Morrison

Spring and Summer Qtrs.

63.210 Philosophy of Recreation

3 Q.H.

A study of history, theories, concepts, attitudes of play, recreation, and leisure related to developing a personal philosophy. Viewpoints and input from other fields as they apply to recreation and leisure.

Prof. Robinson

Fall and Winter Qtrs.

63.215 Trends and Issues in Recreation

3 Q.H.

For nonmajors in Recreation. National and international issues and trends in the professional field; trends in participation with professional implications; emerging programs; legislation; the leader and the future.

Prof. McCay

Spring Qtr.

*Including lab.

63.220 Methods and Materials in Recreation

3 Q.H.

Program planning in recreation includes the study of the physical, social, and emotional characteristics and needs of all age groups, and the most appropriate recreational programs that meet the needs of these individuals and groups. Also includes programs for special occasions and evaluation of programs for improvement purposes. The role of leadership in developing and operating programs is discussed.

Prof. Sayed

Fall and Winter Qtr.

63.240 Dance and Cultures

3 Q.H.*

Learning and teaching folk dances; also cultural appreciation through dance, music, arts, crafts, customs, foods, dress, history, and traditions.

Prof. Eliopoulos

Fall and Winter Qtrs.

63.250 Group Dynamics

3 Q.H.

Designed for promoting an understanding of group processes and developing human relations skills. Major areas of concentration include: communications, leadership, decision making, and evaluation of the group process.

Prof. Eliopoulos

Fall and Winter Qtrs.

63.254 Introduction to Therapeutic Recreation Services

3 Q.H.

Understanding of the needs and attitudes of and toward people who are impaired, disabled, or handicapped. Study of the various disabling diseases and conditions, as well as the people in therapeutic recreation services.

Prof. Robinson

Fall and Winter Qtrs.

63.256 Recreation Activities for Atypical Individuals and Groups I

3 Q.H.

Adaptation of recreational activities to meet the needs of handicapped individuals in hospitals and other agencies offering recreational programs for handicapped. Emphasis on the basic principles of recreational therapy.

Prof. Eliopoulos

Fall and Winter Qtrs.

63.257 Recreation Activities for Atypical Individuals and Groups II

3 Q.H.

A continuation of 63.256 in adaptation of recreational activities to meet the needs of handicapped individuals. Includes observation of activities in therapeutic setting.

Prof. Eliopoulos

Spring Qtr.

63.260 Administration of Recreation and Parks

4 Q.H.

Administration procedures of tax-supported recreation and park operations. Concentration on legality, commissions, area and facility design. Also personnel policies and problem solving related to administration and management.

Prof. Robinson

Fall and Winter Qtrs.

63.262 Recreation and Budgeting and Financing

3 Q.H.

A study of the process of budget and finance planning in the field of recreation. Planning a short- or long-term budget, including budget evaluation and a study of financial policies of government and private agencies. Also procedures for bidding, purchasing, inventory, and others.

Profs. McCay and Morrison

Spring Qtr.

63.266 Recreation and Community Schools

3 Q.H.

The place of the school in community recreation. Special emphasis on the schools' 12-month program to meet the needs of all ages. Field programs dealing with the community school concept.

Prof. Sayed

Spring Qtr.

63.257 Introduction to Youth Groups

3 Q.H. *

Philosophy, history, and program of such various youth groups as YMCAs, YWCAs, and Boys' and Girls' Clubs. Visiting and evaluating programs of selected clubs and organizations; identification of service agencies in the United States; and comparative study of youth

*Including lab.

programs in different countries.

Prof. Sayed

Fall and Winter Qtrs.

63.270 Arts and Crafts

3 Q.H.*

Survey of selected handicraft arts: sketching, acrylic painting, paper sculpture, wood carving, decoupage, printing, weaving, macrame and batik, and selected independent study. Emphasis on acquisition of fundamental skills, experimentation, and preparation for teaching.

Ms. Dawson

Fall and Winter Qtrs.

63.280 Supervised Field Experience and Teaching

16 Q.H.

Comparable to student teaching in education. Professional assignment in recreation setting; i.e., industry, center, school, hospital, agency, organization, housing, settlement, park playground, camp. Supervision and conferences; seminar.

Profs. McCay and Jeffrey

Spring and Summer Qtrs.

63.285 Introduction to Research

4 Q.H.

A study of empirical research procedures, including: planning the study, sampling, designing instrumentation, gathering and analyzing data. Students write a research proposal, simulate response data, and analyze such data through use of computer-based statistical packages.

Prof. Morrison

Fall and Winter Qtrs.

63.290 Research Seminar

Students design and carry out individual or collaborative research projects under close faculty supervision. Each student is encouraged to use the proposal developed in 63.285 (Introduction to Research) as a basis for such a project. A written report of research findings is required.

Prof. Morrison

Spring Qtr.

Physical Therapy

64.111 Introduction to Physical Therapy

1 Q.H.*

Orientation to the field of physical therapy and its role in the health professions.

Miss Cardinali and Miss Foster

Winter Qtr.

64.113 Introduction to Physical Therapy

(Prereq. 64.111) 2 Q.H.*

Theory and practice in applied body mechanics and basic procedures relating to patient management.

Miss Foster and Mrs. Leventhal

Spring Qtr.

64.115 Introduction to Physical Therapy

(Prereq. 64.113) 2 Q.H.*

Practice in the preparation of patients and equipment for various treatment procedures. Introduction to ambulation and safety procedures. Theory, demonstration, and practice in hydrotherapy.

Miss Cardinali, Miss Foster, Mrs. Leventhal, Miss Sloop, and Staff

Spring and Summer Qtrs.

64.121 Gross Anatomy

(Prereq. 18.126, 18.148, 64.115) 5 Q.H.*

The structure and functions of the human body, with particular emphasis on the skeletal, muscular, and nervous systems. Lecture and laboratory with dissection.

Prof. Powers and Staff

Fall and Winter Qtrs.

64.131 Applied Anatomy

(Prereq. 11.172, 18.126, 18.148, 64.115) 5 Q.H.*

A further study of neuromuscular function, with emphasis on the mechanical and physiological factors involved; application to normal and pathological movement; physiology of exercise.

Miss MacFarlane and Staff

Fall and Winter Qtrs.

*Including lab.

- 64.144 Physical Therapy I** (Prereq. 11.172, 18.126, 18.148, 64.115) 4 Q.H.*
Theory, demonstration, and practice in massage; heat and light.
Miss Foster, Mrs. Leventhal and Staff
Fall and Winter Qtrs.
- 64.145 Physical Therapy II** (Prereq. 64.121, 64.131, 64.144) 4 Q.H.*
Theory, demonstration, and practice in evaluation procedures and analysis of functional activities.
Prof. Cerasoli, Miss Cardinali, Mrs. Leventhal, and Mrs. Williams
Spring and Summer Qtrs.
- 64.146 Physical Therapy III** (Prereq. 64.121, 64.131, 64.144) 4 Q.H.*
Theory, demonstration and practice in basic therapeutic exercise.
Prof. Van Slyck, Miss Cardinali, and Staff
Spring and Summer Qtrs.
- 64.156 Physical Therapy IV** (Prereq. 64.145, 64.146) 4 Q.H.*
Theory, demonstration, and practice in prosthetics and orthotics; physical therapy management of medical and surgical chest disorders.
Prof. Van Slyck, Prof. Cerasoli, Miss Foster, and Mrs. Williams
Fall and Winter Qtrs.
- 64.157 Physical Therapy V** (Prereq. 64.145, 64.146) 3 Q.H.*
Theory, demonstration, and practice in electrical muscle stimulation and testing procedures.
Prof. Shaffer, Miss Sloop, and Staff
Fall and Winter Qtrs.
- 64.158 Physical Therapy VI** (Prereq. 64.156, 64.157) 4 Q.H.*
Theory, demonstration, and practice in advanced therapeutic exercise.
Prof. Van Slyck, Prof. Cerasoli and Staff
Spring and Summer Qtrs.
- 64.159 Clinical Seminar** (Prereq. 64.156, 64.157) 3 Q.H.
Selected topics related to clinical aspects in physical therapy. Interpersonal relationships, ethics, and teaching methods.
Profs. Shaffer and Cerasoli
Spring and Summer Qtrs.
- 64.165 Professional Literature and Research** (Prereq. 64.158, 64.159) 2 Q.H.*
Professional literature through Journal Club; introduction to scientific methodology and preparation of an independent research proposal.
Prof. Cerasoli and Staff
Fall and Winter Qtrs.
- 64.173 Rehabilitation** (Prereq. 64.186) 2 Q.H.
Concepts of rehabilitation and community health presented by allied health personnel. Emphasis on the role of the physical therapist as a member of the health team. Class discussion and seminar.
Mrs. Leventhal
Spring Qtr.
- 64.176 Administration** (Prereq. 64.186) 3 Q.H.
Principles and methods in administrative responsibilities, including supervision and consultation.
Prof. Carlisle and Mrs. Leventhal
Spring Qtr.
- 64.186 Supervised Clinical Education** (Prereq. professional cumulative average of 2.0) 8 Q.H.
Advanced clinical experience (full time), providing the student with opportunities to practice various phases of physical therapy under supervision in preparation for assuming the role of a qualified physical therapist.
Profs. Shaffer, Cerasoli, and Staff
Fall and Winter Qtrs.
- 64.210 Pathology** (Prereq. 18.126, 18.148) 3 Q.H.
Lectures and demonstrations of pathological and gross specimens. Inflammation, repair, infection, immunity and hypersensitivity, degenerative processes, disturbances of metabolism and circulation; disorders of growth, including tumors.
Gherardo J. Gherardi, M.D.
Fall and Winter Qtrs.
- 64.220 Clinical Medicine I** (Prereq. 18.126, 18.148) 2 Q.H.
Lectures covering the various areas of medicine and surgery related to conditions commonly

encountered in patients treated by the physical therapist. Pediatrics, general medicine, general surgery.

John W. Graef, M.D., and Sidney Koretsky, M.D.

Winter Qtr.

64.221 Clinical Medicine II

(Prereq. 18.126, 18.148, 64.121, 64.210) 3 Q.H.

A continuation of Clinical Medicine 64.220. Orthopedic conditions, thoracic surgery, role of the laboratory.

Henry H. Banks, M.D., and Associates

Spring Qtr.

64.222 Clinical Medicine III

(Prereq. 18.126, 18.148, 64.121, 64.210) 3 Q.H.

A continuation of Clinical Medicine 64.220. Clinical neurology and neurosurgery, plastic surgery, burns, dermatology, gynecology, urology.

John J. Sullivan, M.D., and Associates

Spring Qtr.

64.235 Psychiatry

(Prereq. 19.102, 19.140) 3 Q.H.

Review of psychiatric categories, including consideration of etiology and treatment. Psychosocial variables significant in the management of patients with whom the physical therapist is concerned.

Fred Hinman, M.D.

Fall Qtr.

64.246 Applied Physiology

(Prereq. 18.126, 64.165) 4 Q.H.*

Implementation of independent research proposals. Effect on the physiological processes of the body produced by basic treatment and testing procedures of physical therapy; modifications due to pathological changes. Patient presentation included.

March Enders, M.D., Prof. Cerasoli, and Staff

Fall and Winter Qtrs.

64.250 Neuroanatomy

(Prereq. 64.121, 64.131) 3 Q.H.

Morphological and functional management of the nervous system; derangement of normal structure and function of the nervous system in various diseases. Lecture and laboratory with dissection.

Prof. Powers and Staff

Fall and Winter Qtrs.

School and Community Health Education

65.110 Foundations of Health Education

2 Q.H.

Orientation to school health education: introduction to the conceptual approach in health education, with emphasis on personal health and factors influencing health. Introduction to the philosophy of health education.

Staff

Fall Qtr.

65.114 Mental Health

(Prereq. 19.102 or equiv.) 4 Q.H.

An investigation of mental illness and well-being as they relate to total health, with concern for the factors that influence mental and emotional behavior. Various approaches to mental health education in school programs included.

Miss Zaremba

Fall and Spring Qtrs.

65.116 Nutrition

(Prereq. 12.102) 4 Q.H.

The principles of good selection, including knowledge of the basic nutrients, with emphasis on building and maintaining sound health. Nutritional problems, such as deficiency diseases, food fallacies and fads, and weight control, including various approaches to nutrition education in school programs.

Staff

Fall and Spring Qtrs.

65.118 Drug Use and Abuse

4 Q.H.

The use and abuse of modern drugs in our society, including prescription and nonprescription drugs, alcohol and tobacco, and their physiological and psychological effects on the body; the social problems surrounding drug abuse, including various approaches to drug education in school programs. (Open to all N.U. students.)

Miss Maguire

Fall and Winter Qtrs.

*Including lab.

65.129 Health Education

3 Q.H.

Principles of personal health; emphasis on information pertinent to mental and physical well-being, current social behavior, and effective approaches to college living.

Staff

Fall and Spring Qtrs.

65.130 Health Problems of the College Student

(Prereq. Physical Education Majors only) 3 Q.H.

Discussion of the major health problems affecting college students. Principles of personal health, with emphasis on healthful college living.

Staff

Spring Qtr.

65.140 Concepts in Health, Aging, and Longevity

4 Q.H.

Principles of the aging process and implications for diverse community, state, and national health programs.

Staff

Fall Qtr.

65.160 Instructional Resources

2 Q.H.

Survey of audiovisual media. Actual operation of selected types of equipment. Production of transparencies, felt boards, etc. Creative approaches stressed.

Staff

Winter Qtr.

65.207 First Aid, Safety, and Preventive Health Education

(Prereq. 65.110) 4 Q.H.

Personal habits and activities which may delay the aging process and/or preserve the homeostatic balance of the human being, with special attention to physical fitness, first aid, safety education, and other preventive health measures as they relate to total health.

Staff

Winter and Spring Qtrs.

65.215 School and Community Health

(Prereq. 65.129) 3 Q.H.

Focus on the teacher's all-important role in developing and relating the principles, patterns, and programs of school and community health education.

Staff

Summer Qtr.

65.216 Methods and Materials in Health Education

(Prereq. 65.129) 4 Q.H.

Materials appropriate to the teaching of health and safety in the elementary and secondary school; emphasis on direct unit instruction.

Staff

Winter Qtr.

65.217 Teaching Procedures/Curriculum in Health Education in School and Community

(Prereq. Motivation, 19.146, or equiv.) 4 Q.H.

Current methods, with study of new approaches to instruction in health education. Includes analysis of curriculum and the relationships among curricula and teaching methods.

Staff

Spring Qtr.

65.218 Public Health

3 Q.H.

Principles of public health, with particular emphasis on the emerging patterns of community organization and activities in the public health field.

Staff

Fall and Winter Qtrs.

65.219 Public Health and Community Resources

4 Q.H.

Principles of community health, with emphasis on emerging contemporary local, national, and world health problems; health services, including the choice of medical care; consumer health; and available community resources for enriching school health programs. Focus on public and community service through health education.

Staff

Spring Qtr.

65.222 Drug Use and Abuse

(Prereq. 65.114, majors only) 4 Q.H.

Investigation of the use and abuse of modern drugs in our society, covering prescription and nonprescription drugs, alcohol and tobacco, and their physiological and psychological effects on the body. The social problems surrounding drug abuse are discussed, as are various approaches to drug education in school programs.

Miss Maguire

Spring Qtr.

65.223 Human Sexuality and the Family

(Prereq. 50.131) 4 Q.H.

Physical, psychological, social, historical, semantic, and comparative cultural aspects of human sexuality; needs and problems at several stages of maturation, including various approaches to sex education in the school.

Staff

Fall Qtr.

65.225 Communicable and Degenerative Diseases

(Prereq. 18.120) 4 Q.H.

The disease immunity process, with emphasis on prevalent communicable diseases in the United States today and their transmission; chronic diseases; cardiovascular diseases; cancer, diabetes, and other constitutional and degenerative diseases and disorders which affect the nation's health.

Staff

Spring Qtr.

65.233 Organization and Administration of School and Community Health Education

4 Q.H.

Principles and methods of organization and administration of school health and community health education programs: ethics, personnel, budget, facility management, priorities.

Staff

Spring Qtr.

65.234 Health Problems of the School Child

4 Q.H.

Recognition of common physical, mental, and emotional health problems of children and youth, so that they may be dealt with intelligently by the classroom teacher.

Miss Maguire

Winter and Spring Qtrs.

65.235 Health Counseling

4 Q.H.

The identification of physical, mental, emotional, and social health problems; remedial procedures; and counseling techniques, so that problems may be dealt with intelligently by health educators.

Staff

Spring Qtr.

65.238, 65.239 Seminar

(Prereq. for 65.238 is 50.141) 2 Q.H.

(Prereq. for 65.239 is 65.238) 2 Q.H.

Discussion of current problems and new developments as they relate to health education in school and a variety of community settings. An introduction to research culminating in the writing of a research paper.

Staff

Spring Qtr.

65.240 Student Teaching/Field Experience

(Prereq. 65.217) 12 Q.H.

Observation and practical teaching experience in school health programs and/or field experience in selected community health education settings. Supervision and evaluation by personnel in cooperating schools and agencies and by Boston-Bouve' College faculty; seminars.

Staff

Fall Qtr.

Pharmacy

71.201 Pharmacy Orientation

1 Q.H.

A survey course designed to introduce the beginning Pharmacy student to the simple fundamentals of using the basic tools and equipment in the practice of pharmacy. Modern audiovisual aids explain the prescription balance, graduals, mortars and pestles, filtration, emulsification, tablet triturates, ointments and creams, suppositories, and prescription packaging.

Prof. Smith

Fall Qtr.

71.202 Pharmacy Orientation

1 Q.H.

Calculations to enable a student to prepare various pharmaceutical formulations and prescriptions. A programmed instruction text is used.

Prof. Smith

Winter Qtr.

71.228 Special Research Project

(Prereq. consent of Dean) 3 Q.H.

Research on special problems may be undertaken in one or more of the following areas: medicinal chemistry, pharmacognosy, pharmacology, pharmacy, and pharmacy administration.

Staff

Spring Qtr.

71.229, 71.230/Special Research Project

3 Q.H. ea.

A course of directed study or research in one of the pharmaceutical sciences wherein the student may undertake in-depth investigation of a special interest area.

Prof. Goldstein

71.243 Pharmaceutical Jurisprudence

4 Q.H.

A comprehensive analysis and interpretation of all laws relating to the practice of pharmacy. Federal and state food and drug laws, narcotic laws, Medicare and Medicaid regulations, and state pharmacy laws are discussed.

Prof. Goldstein

Fall Qtr.

71.245 Pharmacy Administration I

4 Q.H.

Socioeconomic aspects of pharmacy: the government's relationship to the pharmaceutical industry, trends in contemporary practice, third-party payment plans, macroeconomic impact on the industry, and the interaction of current concepts in pharmacy.

Prof. Goldstein

Winter Qtr.

71.251 Clinical Pharmacy

(Prereq. 65.218, 72.244) 3 Q.H.

Initial course in clinical pharmacy wherein the student learns to gather and evaluate medication data of patients, make interpretations of clinical laboratory data, and study potential drug interactions of clinical significance.

Staff

Winter Qtr.

71.253 Clinical Pharmacy

(Prereq. 71.251 or equiv.) 7 Q.H.*

Learning to observe patient response to medication and to evaluate and advise on all factors which may modify efficacy, safety, and economy of therapy. Lectures are devoted to basic facts needed to make evaluations and reports. Laboratory consists of two mornings of medical work rounds in the hospital, as well as case discussion orientation in various medical specialties.

Prof. Inashima

Spring Qtr.

71.261 Pharmacy I

(Prereq. 12.145, 11.172) 4 Q.H.*

The study of physicochemical theories and principles, and their application to pharmaceutical systems: intermolecular forces of the various states of matter, solubility phenomena, equilibria, complexation, micrometities, micro- and macromolecular systems, rheology, stability, and chemical kinetics.

Prof. Smith

Fall Qtr.

71.262 Pharmacy II

(Prereq. 71.261) 4 Q.H.*

Application of fundamental principles and methods to the formulation of official and nonofficial preparations and dosage forms.

Prof. Smith

Winter Qtr.

71.263 Pharmacy III

(Prereq. 71.262) 4 Q.H.*

A continuation of 71.262, with further reference to official and nonofficial preparations and more advanced dosage forms.

Fall and Winter Qtrs.

71.264 Pharmacy IV

(Prereq. 71.263) 4 Q.H.

Physicochemical considerations relating to drug effectiveness and dosage from design.

Spring Qtr.

71.265 Professional Practice I

(Prereq. 71.264) 5 Q.H.*

Correlates previous pharmacy courses. The compounding and dispensing of solid and liquid

*Including lab.

dosage forms of medication, with emphasis on chemical incompatibilities. Prescription practice involving specialties in the completely stocked, operative Gillette Pharmacy.

Prof. Palumbo

Fall Qtr.

71.266 Professional Practice II

(Prereq. 71.265) 4 Q.H.*

A continuation of Professional Practice I, including lecture demonstration designed to provide the student with practical knowledge of various surgical devices, appliances, and hospital and sickroom supplies used in modern patient care. Prescription practice is continued, with emphasis on specialties and possible drug interactions.

Prof. Palumbo

Winter Qtr.

71.267 Professional Practice III

(Prereq. 71.266) 4 Q.H.

The current practice of pharmacy. The practical aspects of pharmacy, including the various laws and problems of non-prescription pharmaceuticals applied to case situations in dispensing.

Spring Qtr.

71.270 Principles of Management

3 Q.H.

The fundamentals of business organization, with emphasis on the qualitative and legal aspects of management. An analysis of the marketing structure of the drug trade, forces of organizations, personnel management, and decision-making theory using non-qualitative data.

Prof. Goldstein

71.271 Financial Management

3 Q.H.

The quantitative aspects of management relating to the operation of hospital and retail pharmacies. Emphasis placed on basic accounting procedure, statement analysis, budgets, cash flow, and taxation.

Prof. Goldstein

71.272 Community Pharmacy Management

3 Q.H.

The management requirements for establishing a community pharmacy. A comparative analysis of the prevailing types of operations, location, leases and business organization, staffing, plant layout and design, and financial factors.

Prof. Goldstein

71.275 Seminar in Community Pharmacy Management

3 Q.H.

A discussion course on all phases of community pharmacy operations, with extensive utilization of the case method of instruction.

Prof. Goldstein

71.278 Hospital Pharmacy I

3 Q.H.

The relationship of the pharmacy to the total hospital structure. Design of the physical plant, staffing personnel management, and the law of institutional practice.

Prof. Goldstein

71.279 Hospital Pharmacy II

3 Q.H.

An analysis of various concepts in drug distribution, with extensive utilization of the case method of instruction.

Mr. Brass

71.280 Seminar in Hospital Pharmacy

3 Q.H.

A discussion course on special topics of current interest relating to hospital pharmacy practice.

Mr. Brass

71.282 Parenterals

3 Q.H.*

A study of parenterals, injectibles, and intravenous additives, with their formulations, properties, methods of preparation, and administration.

Prof. Krause

*Including lab.

72.230 Drug Analysis

(Prereq. 12.145) 5 Q.H.*

A survey of the quantitative analytical techniques applicable to the evaluation and assay of natural and synthetic drugs and their formulations. Emphasis on chromatographic, spectroscopic, and other instrumental methods, with selected laboratory experiments in the use of these as defined in official compendia.

Prof. Raffauf

Spring and Summer Qtrs.

72.241 Introduction to Therapeutics

(Prereq. 18.182, 12.145) 4 Q.H.

Principles of pharmacognosy, pharmacology, and medicinal chemistry applied to the discovery of drugs of therapeutic utility to man. A detailed discussion of drugs affecting the central nervous system.

Prof. Raffauf

Winter Qtr.

72.242 Chemical Pharmacology I

(Prereq. 72.241) 5 Q.H.

A continuation of 72.241. An interdisciplinary approach to the fundamental chemical and pharmacological principles of drug action. A discussion of the structure-activity relationship, adsorption characteristics, metabolic fate, pharmacodynamics, and therapeutic application principally of those drugs acting at sympathetic and neuroeffector junctional sites.

Prof. Neumeyer

Spring and Summer Qtrs.

72.243 Chemical Pharmacology II

(Prereq. 72.242) 6 Q.H.*

A continuation of 72.242, with special emphasis on drugs affecting the hematopoietic systems, the kidneys, and the adrenals.

Prof. Neumeyer

Fall Qtr.

72.244 Chemical Pharmacology III

(Prereq. 72.243) 6 Q.H.*

A continuation of 72.243, with special emphasis on anti-infectives and other chemotherapeutic agents, biologicals, and vitamins.

Prof. Raffauf

Winter Qtr.

72.250 Identification of Abuse Drugs

3 Q.H.*

An introduction to the chemistry, biological action, and methods of detection and assay of commonly abused drugs.

Prof. Raffauf

72.251 Radiopharmaceuticals

3 Q.H.*

The physics, chemistry, and pharmaceutical uses of radiopharmaceuticals. Methods for preparation and handling of these drugs are discussed in a practical way, as well as the rationale for their use in diagnosis and therapy.

Dr. Davis

73.203 Anatomy-Physiology

(Prereq. 12.145, 18.132) 5 Q.H.

Structure and function of cells, tissues, organs, and systems discussed in an integrated manner. The cell, the endocrine system, the reproductive system, and the nervous system are covered.

Prof. MacKeen

Fall Qtr.

73.204 Anatomy-Physiology

(Prereq. 73.203) 5 Q.H.*

Structure and function of the various life-supportive systems not covered in the first quarter. Laboratory is devoted to basic principles involved in understanding life systems and cell function.

Prof. Inashima

Winter Qtr.

73.223 Clinical Biochemistry

(Prereq. 90.151) 4 Q.H.*

Electrolytes, enzymes, and hormones of clinical and pathologic interest, with experiments to interpret disordered biochemistry.

Prof. Spector

Spring and Summer Qtrs.

73.245 Introduction to Pathology

(Prereq. 73.204, 73.223) 4 Q.H.

Basic concepts of pathology for the Pharmacy student, with emphasis on disease processes

*Including lab.

and alterations of normal biochemical mechanisms.

Fall Qtr.

73.247 Toxicology

(Prereq. 72.244) 4 Q.H.

Principles of toxicology, including FDA requirements relating to new drugs, environmental and other factors affecting the toxicity of therapeutic agents, mechanisms of toxicity, and clinical applications.

Prof. Reinhard

Spring Qtr.

Nursing

80.101 Fundamentals of Nursing

6 Q.H.*

Basic to all other courses in nursing. Focus is on the patient as an individual. Underlying this is the concept of homeostasis and the role of the nurse in meeting basic needs. Nursing action is based upon the principles drawn from the behavioral social and biological sciences. Assignments in patient care are designed to provide the student with opportunities to interpret these principles in the promotion of health and the prevention of illness.

Prof. Wilcox and Staff

Fall Qtr.

80.102 Fundamentals of Nursing

(Prereq. 80.101) 6 Q.H.*

The major focus is the identification of common deviations from homeostasis and the supportive nursing measures involved in the restoration of the patient to normal homeostasis.

Prof. Wilcox and Staff

Winter Qtr.

80.103 Fundamentals of Nursing

(Prereq. 80.102) 6 Q.H.*

The major focus is on the identification of specific long-term deviations from homeostasis and the nursing actions involved in the restoration of the patient to optimal function and adaptation.

Prof. Wilcox and Staff

Spring Qtr.

80.108 Introduction to Technical Nursing

5 Q.H.*

Focus on the role of the technical nurse as a member of the nursing team. Major emphasis placed upon the ability to provide direct nursing care through the use of the problem-solving process in developing and implementing an effective care plan, based upon principles from the biophysical, behavioral, and social sciences with broad application to nursing problems.

Prof. Kane and Staff

Fall Qtr.

80.109 Technical Nursing

(Prereq. 80.108) 2 Q.H.

Emphasis on the student's understanding of selected medical and surgical conditions and developing the ability to relate principles from biophysical and psychosocial sciences to concepts which give meaning to the nursing care of patients.

Prof. Kane and Staff

Winter Qtr.

80.110 Nursing Seminar

(Prereq. 80.108—80.109) 3 Q.H.

A scientific approach to the analysis of health problems and related medical and nursing therapy. Students present the results of independent research in class.

Prof. Kane and Staff

Spring Qtr.

80.111 Trends in Nursing

1 Q.H.

Acquaints the student with the evolvement of nursing and its role in society today. Emphasis placed on the latter in discussions of preparation for nursing responsibilities inherent in the nursing role, and events that influence nursing practice as it is today and projected for the future.

Prof. Kane

Spring Qtr.

80.201 Nursing

3 Q.H.*

The first course in nursing introduces the student to varying levels of educational preparation in nursing, philosophy, purposes and objectives of the program; interpretation of one's own health behavior patterns; identification of basic needs of man; identification of patterns of

*Including lab.

meeting one's own needs; distinguishing physiological, sociological, and psychological components of human sexuality; communication techniques; interpersonal processes; roles and role conflicts; group dynamics and group processes; and methods of problem solving.
Miss Gagnon and Staff Fall and Summer Qtrs.

80.202 Nursing

3 Q.H.*

The second course assists the student in identifying general social trends and their implications for nursing; characteristics of a profession; functions and purposes of nursing organizations; standards of behavior of the professional nurse; fundamental principles of malpractice law; legislation affecting health care and factors influencing the delivery of health care; major world health problems and selected health problems affecting the welfare of communities; and the roles and responsibilities of the comprehensive health team.

Miss Gagnon and Staff

Winter and Summer Qtrs.

80.203 Nursing

3 Q.H.*

The science of nutrition, assisting the student in recognizing factors influencing the formation of food habits in self and others; identifying normal nutrient needs according to age groups; recognizing the need for objectivity in working with individuals in meeting their needs, as well as the importance of nutrition and its relationship to health. Medical terminology commonly used is studied.

Miss Gagnon and Staff

Spring and Summer Qtrs.

80.204 Nursing—Universal Needs

(Prereq. 80.201, 80.202, 80.203) 5 Q.H.*

Basic nursing theory and application in caring for people in hospital settings. Selected universal needs of man serve as the basis for the course, and the focus is on the nursing process as it relates to meeting these needs.

Prof. Gates and Staff

Fall and Winter Qtrs.

80.205 Nursing—Common Problems I

(Prereq. 80.204) 5 Q.H.*

Exploring problems common to individuals who are unable to meet their own health needs. Clinical practice introduces skills and activities to meet the needs of patients with these common problems in general hospital settings.

Prof. Gates and Staff

Spring and Summer Qtrs.

80.206 Nursing—Common Problems II

(Prereq. 80.205) 8 Q.H.*

Physiological and psychological disturbances in illness. Emphasis on the analysis of patient problems and the nurse's role in the control of infection; pharmacology and drug therapy, responses of body to stress, maintenance of nutrition, and patient teaching in long-term illness. Clinical laboratory experience and a weekly discussion-seminar group.

Prof. Goodfellow and Staff

Fall and Winter Qtrs.

81.101 Medical-Surgical Nursing

(Prereq. 80.103) 11 Q.H.*

Utilizing the concept that all illnesses produce alterations in body function, the student is introduced to selected conditions requiring medical and/or surgical intervention. Major emphasis in classroom and clinical instruction is upon the nurse's role in meeting patients' physical and psychosocial needs, further developing nursing techniques, and learning specific skills needed to care for assigned patients.

Prof. DeScenza and Staff

All Quarters

81.102 Medical-Surgical Nursing

(Prereq. 81.101) 7 Q.H.*

Sequential to 81.101. Designed to broaden the student's understanding of adults with more serious forms of physical illness. The content has been developed to present the nurse's responsibilities in caring for patients with alterations in physiologic functions and body image. Classroom and clinical experiences focus on principles and nursing skills that are involved in providing complex care for selected patients.

Prof. Carroll and Staff

All Quarters

81.201 Medical-Surgical Nursing

(Prereq. 80.206) 9 Q.H.*

Focuses on selected physiologic problems encountered in the care of adult patients. Guided clinical experiences are planned, with special emphasis on the effects of illness on the

individual's pattern of living, continuity of care, and health teaching. Classroom and clinical experiences focus on the knowledge and skills necessary to plan and implement comprehensive health care.

Prof. Johns and Staff

All Quarters

82.101 Maternal and Child Health

(Prereq. 19.141, 19.142, 80.103) 12 Q.H.*

Focuses on the family and the individual and their developmental task, with emphasis on positive health practices within the family unit. The nursing approach centers upon the health needs of mothers and children of all ages. The needs of the hospitalized child are identified by studying the effect of illness upon his normal growth and development. The common illnesses of childhood are discussed.

Prof. Otto and Staff

All Quarters

82.201 Maternal and Child Health

(Prereq. 80.206, 19.141) 9 Q.H.*

Maternal and child nursing focuses on the nursing needs of mothers and children. This course considers various aspects and stresses encountered within the family structure, particularly as they relate to the expanding family and the child's need in health or illness. Exploration is made of the present-day problems relating to maternal and child welfare and their implications for society.

Prof. Lynch and Staff

All Quarters

83.101 Psychiatric Nursing

(Prereq. 81.101, 82.101) 6 Q.H.) 6 Q.H.*

Assists the student to acquire additional knowledge of human behavior; to provide the opportunity to achieve understanding of selected human motivations and defenses; and to learn additional interpersonal skills which may be used in the nursing care of patients. The opportunity to apply this knowledge, to observe and analyze behavior, and to practice skills is offered in supervised laboratory sessions.

Prof. Gonyow and Staff

Fall, Winter, and Spring Qtrs.

83.201 Psychiatric-Mental Health Nursing

(Prereq. 80.206) 9 Q.H.*

Designed to increase and develop knowledge of mental illness, understanding of the dynamics of human behavior, and the interrelationship of theory and practice as it applies to clinical and community aspects of mental health and psychiatric nursing.

Prof. Lee and Staff

All Quarters

84.201 Public Health Nursing

(Prereq. 81.201, 82.201, 83.201) 9 Q.H.*

Increases understanding of the variety of ways in which communities organize to meet the health and welfare needs of their members. Principles of public health and public health nursing are examined in depth. Attention is given to current health and welfare legislation, environmental factors affecting health, and the role of the nurse in prevention of disease and maintenance of health. Laboratory experiences provide opportunities to work with individuals, families, and community agencies.

Prof. Tingle and Staff

Fall and Winter Qtrs.

85.201 Contemporary Nursing

(Prereq. 84.201) 9 Q.H.*

The final nursing course before graduation. Includes lectures, seminars, progress reports, and eight weeks of student-selected placement experience. The core content includes legal aspects, roles, leadership, change, and research methods. Students demonstrate self-direction by defining their objectives for placement experience, pursuing an area of nursing in which they are particularly interested, utilizing basic principles of research, and evaluating their own performance.

Staff

Spring Qtr.

Allied Health Professions

General Courses

86.102 Hospital Law

2 Q.H.

An analysis of the legal principles relating to medical and paramedical practice within a

*Including lab.

hospital environment. The common law and statutory rights of the hospital, practitioner, and patient are discussed.

Spring Qtr. 1974

86.107 Medical Terminology

4 Q.H.

A study of the language of medicine, including prefixes, suffixes, roots, abbreviations, disease and operative and drug terms. Also included are terms related to all area specialties. The terms are studied as they relate to a specific system of the body.

Prof. Zamczyk

Fall Qtr. 1974

86.112 Foundations of Medical Science I

3 Q.H.

Major disease problems in our society and modes of treatment. Discussion of organized care, diagnosis, and treatment. Consideration of reproduction, birth, and pediatrics.

Fall and Winter Qtrs. 1973-74

86.113 Foundations of Medical Science II

(Prereq. 86.112) 3 Q.H.

A continuation of 86.112 covering heart, cancer,* stroke, blood and lymphatic diseases, accidents, and musculoskeletal, respiratory, and gastrointestinal diseases.

Spring and Summer Qtrs. 1974

86.174 Health, Disease, and Disability I

3 Q.H.

Major disease or disability states and their impact on human physiology and psychology. Social and individual response to these states. Lectures, demonstrations, field visits. Part I emphasizes medical areas.

Winter Qtr. 1974

86.175 Health, Disease, and Disability II

(Prereq. 86.174) 3 Q.H.

A continuation of 86.174. Part II emphasizes surgical areas.

Spring Qtr. 1974

87.131 Dynamics of Health Care I

1 Q.H.

Orientation of the Allied Health Profession student to the history and organization of health care in the United States, with an introduction to the roles of the health-care team members.

Allied Health Faculty

Fall Qtr. 1973

87.132 Dynamics of Health Care II

1 Q.H.

Orientation of the Allied Health Profession student to interdisciplinary health care organization, administration, and procedures.

Allied Health Faculty

Winter Qtr. 1974

87.133 Dynamics of Health Care III

1 Q.H.

Orientation of the Allied Health Profession student to current social situations and problems in the delivery of medical care services.

Allied Health Faculty

Spring Qtr. 1974

MEDICAL LABORATORY SCIENCE

The Medical Laboratory Science professional courses are taught by University faculty, together with supportive clinical faculty.

87.100 Laboratory Medicine—Orientation

1 Q.H.

The history and development of the medical laboratory technologies and pathology.

Prof. Karlsson

Winter Qtr. 1974

87.101 Basic Medical Laboratory Science

(Prereq. 18.132, 12.104, or 12.107) 4 Q.H.*

Introductory course in the basic medical laboratory sciences: methods, principles, theories.

Medical Laboratory Science Faculty

Fall Qtr. 1973

Spring Qtr. 1974

87.102 Basic Medical Laboratory Hematology

(Prereq. 87.101 or concurrent) 2 Q.H.*

Principles and procedures of basic medical laboratory hematology, including basic coagulation.

Prof. Karlsson

Winter and Summer Qtrs. 1974

- 87.103 Basic Medical Laboratory Immunoematology** (Prereq. 87.101) 2 Q.H.*
 Basic principles in immuno-hematology and related techniques, with particular emphasis on those procedures used in blood banking.
 Prof. Barr Winter and Summer Qtrs. 1974
- 87.105 Basic Medical Laboratory Chemistry and Instrumentation** (Prereq. 87.101, 12.171) 4 Q.H.*
 Principles, procedures, and techniques of basic clinical chemistry and instrumentation.
 Prof. Hallsworth Spring and Summer Qtrs. 1974
- 87.111 Medical Microbiology Applied Study (At Hospital)** (Prereq. 18.220, 87.101) 4 Q.H.*
 Clinical practicum in applied microbiology at an affiliated accredited hospital school of medical technology.
 Spring Qtr.
- 87.112 Hematology and Immunoematology Applied Study (At Hospital)** (Prereq. 87.102, 87.103) 4 Q.H.*
 Clinical practicum in applied hematology, coagulation, and and blood banking at an affiliated accredited hospital school of medical technology.
 Fall Qtr.
- 87.115 Medical Laboratory Chemistry Applied Study (At Hospital)** (Prereq. 12.145, 12.171, 87.105) 4 Q.H.*
 Clinical practice in applied clinical chemistry at an affiliated accredited hospital school of medical technology.
 Winter Qtr.
- 87.120 Communications in the Health Sciences** 3 Q.H.*
 Effective communication in the medical scientific community.
 Staff Spring Qtr. 1974
- 87.121 Quality Control** (Prereq. 12.171, 10.105, 87.101, 87.105) 2 Q.H.*
 Basic statistical methods used in medical laboratory quality control.
 Prof. Hallsworth and Dr. Copeland Spring and Summer Qtrs. 1974
- 87.190 Undergraduate Research** (Prereq. 87.102, 87.103, 87.105) 2 Q.H.*
 Special problems in laboratory medicine involving individual research under the direction of a faculty member.
 Prof. Karlsson Fall Qtr. 1973
- 87.201 Pathogenic Microbiology** (Prereq. 18.220 and 87.101) 4 Q.H.*
 Methods of identification and differentiation of normal and pathogenic body flora. Basics of virology; fundamentals of mycology and mycological infections.
 Profs. Barr and Bump Spring Qtr.
- 87.202 Hematology and Immunoematology** (Prereq. 18.132, 87.102, 87.103) 4 Q.H.*
 Review of hemopoiesis morphology and physiology of blood cells and bone marrow. Basic lectures with complementary clinical pathology conferences; discussions on current literature and applied laboratory experiences.
 Prof. Karlsson Fall Qtr. 1973
- 87.203 Medical Immunology and Serology** (Prereq. 87.201, 87.103) 2 Q.H.*
 Medically applied immunological and serological concepts and procedures.
 Prof. Bump and Dr. Gozzo Fall Qtr. 1973
- 87.204 Medical Parasitology** (Prereq. 18.220) 2 Q.H.*
 Laboratory identification of human parasites and a study of their life cycles.
 Prof. Bump Winter Qtr. 1974

87.205 Clinical Chemistry (Prereq. 12.171, 12.145, 87.101, 87.105) 4 Q.H.*
Principles and methodologies of current clinical chemistry procedures used in the medical laboratory for the assessment of human physiological conditions.
Prof. Hallsworth Winter Qtr. 1974

87.221 Medical Laboratory Management 2 Q.H.
Principles of laboratory supervision, communication, and personnel relations. Professional ethics, relationships, and legal responsibilities.
Prof. Bump Spring Qtr.

87.226 Medical Laboratory Science Education 2 Q.H.
Use, evaluation, and development of educational media with particular emphasis on correlation of didactic and clinical instruction.
Profs. Barr and Donahue Winter Qtr. 1974

MEDICAL RECORDS ADMINISTRATION

86.151 Medical Record Science I (Prereq. two years of liberal arts) 4 Q.H.*
Introduction to medical records; history of the medical record and medical record forms. A study of the professional medical record administrator and his relationship to the health facility. Medical staff and committees in hospital. Quantitative analysis of medical records.
Prof. Zamczyk Spring and Summer Qtrs. 1975

86.152 Medical Record Science II (Prereq. 86.151) 4 Q.H.*
The numbering, filing, securing, and preserving of medical records. Principles of law as related to patient care and medical records. Study and practice of medical transcription. The rules of privileged communications and the release of information to agencies are stressed.
Fall and Winter Qtrs. 1975-76

86.153 Medical Record Science III (Prereq. 86.152) 4 Q.H.*
Basic principles of compiling statistics for hospital and other health institutions. Includes the preparation of the daily census, discharge analysis, monthly, annual, and special reports. Birth and death certificates are included. Principles of Standardized Nomenclature of Diseases and Operations and International Classification of Disease, adapted - 8. Study of other indexes used in medical records departments.

Spring and Summer Qtrs. 1976

86.154 Advanced Medical Record Science IV (Prereq. 86.153) 4 Q.H.*
Advanced aspects of medical record science. Includes developing of forms and forms control, planning and managing, new record systems; advanced aspects dealing with statistics and consulting in extended-care facilities and nursing homes.

Fall and Winter Qtrs. 1976-77

86.155 Organization and Management of Medical Record Department I 3 Q.H.
The hospital: patterns of organization, lines of responsibility and authority, medical staff and administrative organization, departmental functions and organization. Fundamental principles and successful practices in accomplishing office work. Office management problems and their solution; conceptual framework for the operation of essential management function, facilities, solutions, and contributions of the office.

Fall and Winter Qtrs. 1976-77

86.156 Organization and Management of Medical Record Department (Prereq. 86.155) 3 Q.H.
Development of an efficient medical record department in any medical care facility. Application of the principles of organization and management in the development and administration of a system of handling medical information.

Spring and Summer Qtrs. 1977

86.157 Seminar in Medical Records (Prereq. 86.154 or concurrently) 2 Q.H.
Case study and discussion for the purpose of integrating the discrete skills and knowledge of

*Including lab.

the professional curriculum into a meaningful whole by student analysis of real and hypothetical problems.

Fall and Winter Qtrs. 1976-77

86.252 Applied Medical Record Science—Directed Study I (Prereq. 86.151, 86.107) 3 Q.H.*
Clinical practicum in medical record science and management techniques at one or more of several affiliated hospitals.

Prof. Zamczyk

Fall and Winter Qtrs. 1973-74

86.253 Applied Medical Record Science—Directed Study II (Prereq. 86.252) 3 Q.H.*
Clinical practicum in medical record science and management techniques at one or more of several affiliated hospitals.

Spring and Summer Qtrs. 1974

86.254 Applied Medical Record Science—Directed Study III (Prereq. 86.253) 2 Q.H.*
Clinical practicum in medical record science and management techniques at one or more of several affiliated hospitals.

Fall and Winter Qtrs. 1974-75

RESPIRATORY THERAPY

86.181 Introduction to Respiratory Therapy 2 Q.H.

The development and understanding of the respiratory therapist's role as a member of the health care profession. A concise survey of the normal structures and functions of the human body with particular emphasis on the organs of respiration and circulation and the principle of oxygen and tissue metabolism.

Mr. McNeil and Mr. Donahue

Fall Qtr. 1973

86.182 Introduction to Respiratory Therapy II (Prereq. 86.181) 3 Q.H.

An expansion of the information from 86.181 into the area of cardiopulmonary pathology, with an introduction to the therapy modalities.

Mr. McNeil and Mr. Donahue

Winter Qtr. 1974

86.183 Mechanics in Respiratory Therapy (Prereq. 86.182) 4 Q.H.*

The application of basic microbiologic principles to the sterilization of respiratory therapy equipment. Theory and classification of flowmeters, regulators, nebulizers, humidifiers, and ventilators. The laboratory is devoted to the application and troubleshooting of the apparatus.

Mr. McNeil and Mr. Donahue

Spring Qtr. 1974

86.184 Procedures of Respiratory Therapy I (Prereq. 86.183) 4 Q.H.*

This course is designed as the didactic portion of beginning clinical experience to augment the student's understanding of physiologic respiratory care. Physical examination of the chest, laboratory diagnosis, and chest X-ray are presented. The pathophysiologic basis of the therapy of restrictive and obstructive diseases, acute respiratory failure, and chronic respiratory failure are discussed in detail.

Prof. Cassara

Fall and Winter Qtrs. 1973-74

86.185 Procedures of Respiratory Therapy II (Prereq. 86.184, 86.284) 4 Q.H.*

The major chest diseases of neonates, children, and adults from the approach of diagnosis, etiology, treatment, and prognosis.

Prof. Cassara

Spring and Summer Qtrs. 1974

86.186 Respiratory Diagnostics (Prereq. 86.185, 86.285) 4 Q.H.*

The third didactic companion to the third clinical experience quarter. It teaches the theory and technique of blood gas analysis and pulmonary function testing.

Staff

Fall and Winter Qtrs. 1974-75

86.187 Advanced Respiratory Care (Prereq. 86.186, 86.286) 4 Q.H.*

Principles of departmental organization and concepts of organizational professional responsibilities. Each student presents an independently researched clinical paper based on

the current literature and visits to representative patients in the clinical affiliates.

Prof. Cassara

Spring Qtr. 1975

86.197 Procedures in Respiratory Therapy IV (for 1973-1974 only) (Prereq. 86.196) 4 Q.H.

Applied cardio-pulmonary physiology.

Mr. McNeil and Mr. Donahue

Winter Qtr. 1974

86.198 Procedures in Respiratory Therapy V (for 1973-1974 only) (Prereq. 86.197) 4 Q.H.

Principles and practices involved in the supervision and administration of a respiratory therapy department. Intensive review for professional qualification in oral and written examination.

Prof. Cassara

Spring Qtr. 1974

86.284 Directed Applied Study—Respiratory Therapy (Prereq. 86.184 concurrent) 4 Q.H.*

Clinical experience matched to concurrently taught didactic subject matter. Skills acquired include: physical examination of the chest, airway management techniques, basic oxygen administration, and intermittent positive pressure breathing exercises.

Clinical Faculty

Fall and Winter Qtrs. 1973-74

86.285 Directed Applied Study—Respiratory Therapy (Prereq. 86.185 concurrent) 4 Q.H.*

Clinical material matched to concurrently taught didactic subject matter. Skills acquired include: tracheostomy and endotracheal tube care, management of continuous artificial ventilation with volume and pressure pre-set devices, and chest physical therapy techniques.

Clinical Faculty

Spring and Summer Qtrs. 1974

86.286 Directed Applied Study—Respiratory Therapy (Prereq. 86.186 concurrent) 4 Q.H.*

Clinical experience matched to concurrently taught didactic subject matter. Skills acquired include: spirometric measurement of lung volumes and flow rates, dilution techniques for measurement of residual volume, measurement of A/a gradient and vd/vt, and blood gas measurement of PO₂, PCO₂, and pH.

Clinical Faculty

Fall and Winter Qtrs. 1975

Cooperative Education

90.251 Placement Techniques

1 Q.H.

Career selection and development are discussed concurrently with resume preparation, interviewing technique, and effective written communication to facilitate the planning and implementation of a professional career program.

Fall and Winter Qtrs.

90.253 Professional Development for Teachers

1 Q.H.

Teacher certification, professional ethics, and professional development are examined, along with effective methods of achieving career goals through resume preparation, written communication, and the interviewing process.

Fall and Winter Qtrs.

90.254 Professional Development for Nurses

1 Q.H.

Personal, legal, and professional responsibilities of nursing are discussed concurrently with resume preparation, personal presentation, and effective written communication.

Fall and Winter Qtrs.

90.255 Professional Development in Criminal Justice

1 Q.H.

Career options in criminal justice are reviewed, along with the techniques of resume preparation, interviewing, and effective written communication.

Fall and Winter Qtrs.

90.257 Professional Development for Engineers

1 Q.H.

Career development in the respective engineering fields is examined with a view to current practice and developing trends, along with discussion of resume preparation, interviewing

techniques, and effective written communication.

Fall and Winter Qtrs.

Military Science

Military Science I

91.101 U.S. Defense Establishment

1 Q.H.

Emphasis is given to the history, organization, and mission of the Department of Defense. Further, the mission and organization of the U.S. Army is studied, with emphasis given to the integration of small units into larger units and the general design of military organization.
Fall Qtr.

91.102 Map and Aerial Photo Reading

(Prereq. 91.101) 1 Q.H.

Use of maps and aerial photographs to develop an understanding and an appreciation of these instruments of command and their application to the military service.

Winter Qtr.

91.103 Leadership Laboratory

(Prereq. 91.102) 1 Q.H.

Progressive training in leadership, drill, and command. Exercise in command is stressed wherein students perform duties and functions as officers incident to conduct of training.

Spring Qtr.

Military Science II

91.104 American Military History and Tactics

(Prereq. 91.103) 2 Q.H.

Selected battles and campaigns, coupled with major periods of international crises, are studied with a view towards giving the student an appreciation of the development of the U.S. Army. An introduction to the fundamentals and principles of small unit tactics.

Fall and Winter Qtrs.

91.105 Officer Development Leadership Laboratory

(Prereq. 91.104) 1.5 Q.H.

The functions, duties, and responsibilities of junior military leaders and the development of leadership potential through practical exercises; discussion of the ROTC Advanced Course. Leadership laboratory as described in 91.103.

Spring and Summer Qtrs.

Military Science III

91.106 Leadership and Management

(Prereq. 91.105) 2 Q.H.

Review of the basic problems in leading small units, with emphasis on the role of a platoon leader in setting goals, standards, and motivating performance. Familiarization with communications equipment organic to small units within the Army. Methods of instruction for small unit training classes.

Fall and Winter Qtrs.

91.107 Fundamentals and Dynamics of the Military Team I—Leadership Laboratory

(Prereq. 91.106) 2 Q.H.

Organization of small units within the army and the support which they receive. Familiarization with the principles and fundamentals of small unit tactics. Leadership laboratory as described in 91.103.

Spring and Summer Qtrs.

91.108 Fundamentals and Dynamics of Military Team II

(Prereq. 91.107) 2 Q.H.

Staff organization and responsibilities; troop leading procedures; decision making; composition and development of military intelligence; combined arms operations from patrol to company level. A discussion of the role of the branches of the army within the overall mission of the army.

Fall and Winter Qtrs.

Military Science IV

91.109 Leadership and Management Leadership Laboratory

(Prereq. 91.108) 2 Q.H.

Composition and mission of combined arms forces, company size through battalion size, in

offensive, defensive, and special operations. Leadership laboratory as described in 91.103.
Spring and Summer Qtrs.

91.110 Leadership and Management II—Internal Defense Development

(Prereq. 91.109) 2 Q.H.

The organizational, environmental, personnel, and operational problems encountered by the manager of the modern military team. Included is a discussion of the strategic environmental background in which the military team is employed.

Fall and Winter Qtrs.

91.111 Pre-Camp Orientation—Leadership Laboratory

(Prereq. 91.110) 2 Q.H.

An orientation designed to prepare the cadet for summer camp. Physical training is emphasized to ensure that the cadet is physically prepared. Leadership requirements for the future officer are discussed.

Spring Qtr.

Criminal Justice

92.104 Administration of Criminal Justice

4 Q.H.

Surveys the entire contemporary criminal justice system from the initial contact with the offender through prosecution, disposition, incarceration, and release to the community. Emphasis is placed on major systems of social control: police, corrections, juvenile justice, mental health systems, and their policies and practices relative to the offender. A balance is maintained in providing legal, empirical, and sociological materials.

Prof. Senna

Fall and Winter Qtrs.

92.110 Police-Community Relations

4 Q.H.

Police-public contact; uses of the communications media in projecting the police image; responsibilities of police in dealing effectively with minority groups, civil rights, civil disorder, and public protection. An exploration of the role and function of the role in intergroup relations.

Prof. Sheehan

Spring and Summer Qtrs.

92.112 Criminal Behavior

4 Q.H.

An analysis of various nonconformist and criminal activities generating contemporary subcultures. Societal norms and legal precepts, including the police, the courts, and the correctional systems, are explored as they relate to deviant subcultures.

Prof. Natoli

Fall and Winter Qtrs.

92.113 Law Enforcement Procedures and Social Structure

4 Q.H.

Law enforcement systems in relation to class structure, political, economic, and social power; police and community subcultural developments and problems of professionalization.

Prof. Natoli

Spring and Summer Qtrs.

92.115 Police Operations

4 Q.H.

A general survey of police operational procedures, including patrol, traffic, interrogations, and report writing. Roleplaying is used extensively to demonstrate interviewing methods.

Prof. Sheehan

Spring and Summer Qtrs.

92.131 Law Enforcement Administration and Management

4 Q.H.

The principles of police organization, administration, and management, including staff and line functions, chain of command, span of control, selection of personnel, and promotional systems. Consideration is also given to special problems such as strikes, natural and atomic disasters, narcotic traffic, and vice control.

Prof. Sheehan

Fall and Winter Qtrs.

92.132 Police Supervision

The police supervisor's role in discipline, intradepartmental relations, problem-handling and personnel policies. Problems relating to supervisory relationships, wages, grievances, morale, and safety.

Prof. Natoli

Spring and Summer Qtrs.

92.134 Const. Problems I: The Police and the Criminal Suspect

4 Q.H.

Utilizing Supreme Court decisions and other sources, this course encompasses a study of the constitutional rights of speech, press, religion, association, equal protection of the laws, and their relevance to a democratic society.

Prof. Kassler

Spring and Summer Qtrs.

92.137 Criminology

4 Q.H.

Patterns and evolution of criminal behavior, the social forces involved, and development of the individual criminal; administration of criminal justice; law, courts, police, prisons.

Prof. Schafer

Fall and Winter Qtrs.

92.138 Juvenile Delinquency and Youth Crime

(Prereq. 92.137 or equiv.) 4 Q.H.

The sociological and psychological approaches and their implications for a typology of delinquency; problems of prevention, treatment, and rehabilitation.

Prof. Schafer

Spring and Summer Qtrs.

92.140 The Nature and Behavior of Fire

(Prereq. 11.113, 114 or 18.114, 115 or 92.113 or equiv.) 4 Q.H.

A course in the examination and behavior of fire. Deals with fire-related phenomena such as convection, radiation, contact, and ignition. This embodies consideration of arson, explosions, asphyxiation, and combustibility. The engineering is dealt with in terms of fireproofing agents such as plastics, textiles, building materials, and the chemistry of the halogens. Finally, some time is given to areas of fire experimentation and the potential for more sophisticated inquiry.

Prof. Cunliffe

Fall and Winter Qtrs.

92.141 Criminal Law: Procedural Due Process

4 Q.H.

Utilizing current Supreme Court decisions and other sources, this course examines the relationship between the Bill of Rights and the states, with primary emphasis on the guarantees of fair trial, counsel, privacy, immunity from self-incrimination, and other constitutional safeguards in state and Federal criminal proceedings.

Prof. Kassler

Fall and Winter Qtrs.

92.142 Const. Problems II: The Courts and the Accused

4 Q.H.

Rules of evidence, principles of exclusion, evaluation and examination of evidence and proof, competency, consideration of witnesses. Fundamentals of courtroom procedure, testifying in court, the principles of prosecuting a case, the introduction of evidence. Roleplaying is used as a learning device in mock trials. Class members are required to attend and report on criminal trials.

Prof. Kassler

Spring and Summer Qtrs.

92.143 Introduction to Criminalistics

4 Q.H.*

A survey of the elements of microscopy, spectroscopy, and basic chemistry as they apply to the study of firearms, hair, fibers, blood, paint, tools, glass, documents, laundry marks, poisons, and other materials which comprise physical evidence.

Prof. Cunliffe

Fall, Winter, and Spring Qtrs.

92.146 Legal Aspects of Society

4 Q.H.

Twentieth-century society, with an emphasis upon the legal structure and its impact upon society.

Prof. Kassler

Fall and Winter Qtrs.

92.147 The Juvenile and the Courts

4 Q.H.

Course work examines the juvenile court: its philosophy, procedure, and personnel. Focus is on the discretionary processes by which juveniles are labelled delinquent, dependent and neglected. The roles played by police, prosecution, defense, bench, and social service workers are considered. Field visits arranged.

Prof. Pieczenik

Fall and Winter Qtrs.

92.155 Seminar in Law Enforcement

4 Q.H.

An opportunity for free discussion about the numerous problems facing the law enforcement officer. Periodic oral and written reports are required. Guest lecturers are invited to participate in and lead discussion sessions. An effort is made to have each student formulate his own philosophy of law enforcement prior to his graduation.

Prof. Sheehan

Spring and Summer Qtrs.

92.156 Seminar in Law and Criminal Justice

4 Q.H.

Prof. Kassler

Fall Winter, and Spring Qtrs.

92.157 Research Methods in Criminal Justice

4 Q.H.

Development of research design of the kind most useful to criminal justice problems; understanding of some of the most important issues and problems facing researchers in the field; use of various data collection methods including observation, interviewing, questionnaire construction, and scales for survey analysis; validity and reliability; computer application in criminal justice.

Prof. Siegel

Fall and Winter Qtrs.

92.160 Social Welfare Problems in Criminal Justice

4 Q.H.

A critical examination of culture-of-poverty themes; a brief study of the social welfare system; development of techniques for referral to social agencies; development of self-awareness through thoughtful evaluation of personal bias and experience.

Prof. Ames

Fall, Winter, and Spring Qtrs.

92.161 Delinquency and Adolescent Behavior

4 Q.H.

Psychodynamic development of the adolescent personality and growth of delinquency patterns in this culture. Current novels and essays, as well as standard texts are used.

Prof. Ames

Fall, Winter, and Spring Qtrs.

92.162 Introductory Statistics and Social Research

4 Q.H.

An elementary survey and analysis of the uses of statistics and social research methods, with special reference to utilization of data from the field of criminal justice. The first part of the course covers descriptive statistics and the second examines the basic techniques in social research. Attention is given to methods of collecting, analyzing, and interpreting statistical data, and to the use of statistics in the development of research designs.

Prof. Senna

Fall and Winter Qtrs.

92.165 Rehabilitation of the Offender

4 Q.H.

Basic concepts for influencing and changing human behavior. Special attention is given to an examination of various types of current programs and services developed in the criminal justice system to rehabilitate the offender. Particular emphasis is made of contemporary practices in corrections, such as the community-based work release program, halfway houses, and various forms of individual treatment services.

Prof. Senna

Spring and Summer Qtrs.

92.191, 92.192, 92.193, 92.194 Directed Study

4 Q.H. (each)

92.207 Suicide

(Prereq. consent of instructor) 4 Q.H.

The social and psychological implications of suicide. Theoretical readings begin with Durkheim and go through Alvarez. One day each week spent in study and research at "hot lines" and suicide prevention centers in the metropolitan area.

Prof. Ames

Spring and Summer Qtrs.

92.209 Female Offender

4 Q.H.

The course addresses itself to the female at the various stages in the criminal justice system, from commission of a crime to parole. Both the juvenile and adult offender is studied. The thrust of the course is a critical analysis of existing theory and research on the female offender, with emphasis on the socialization, roles, and social participation of women in society at-large. The male offender is also considered at each level in a comparative sense.

Prof. Turek

Fall and Winter Qtrs.

92.210 Topics in History of Criminal Justice

4 Q.H.

An historic survey of the principles of criminal justice in the ancient and medieval periods, with emphasis upon the impact of religion and philosophy.

Dean Rosenblatt

Fall Qtr.

92.211 Topics in History of Criminal Justice

4 Q.H.

A continuation of the historic survey with an examination of the effect of the Renaissance Reformation and the rise of nation states.

Dean Rosenblatt

Winter Qtr.

92.280 Seminar in Victimology

(Prereq. Juniors and Seniors with consent of instructor) 4 Q.H.

Criminal-victim relationships, with emphasis on victim-precipitated crimes and compensation to the victims. The concept and significance of "victimology"; time, space, sex, age, and occupational factors in criminal-victim relationships; victims of murder, rape, other violent crimes, and property crimes; victim typology; the public or victim; restitution to crime victims. The functional responsibility of the victim.

Prof. Schafer

All Quarters

92.285 Practicum in Community Service

(Prereq. 92.161 or equiv. and consent of instructor) 4 Q.H.

Prof. Ames

All Quarters

Interdisciplinary Courses

93.110 Programming Computers with FORTRAN (Prereq. one year college math.) 4 Q.H.

Techniques for programming problems on any large computer. Emphasis is on general programming methods using the language of FORTRAN. A large number of example problems are presented in an effort to display the applicability of computers to a wide variety of professional activities. No prior computer experience is required.

Prof. Rule

Fall, Winter, and Spring Qtrs.

93.111 Advanced FORTRAN Programming

(Prereq. 93.110) 4 Q.H.

Higher-level aspects of the FORTRAN language are considered. Topics covered include: the use of software packages, the manipulation of large data arrays, processing of non-numeric information, magnetic tape operations, and data file management. An introduction to systems analysis is presented, with emphasis on Monte Carlo and queuing simulation techniques.

Prof. Finkenaur

Fall, Winter, and Spring Qtrs.

93.113 Computers for the Social Sciences

4 Q.H.

Simple FORTRAN is covered only to the point where students can solve elementary original problems. Emphasis is then given to communicating with a discipline-oriented software package, SPSS (Subroutine Package for Social Scientists), to show how computers solve problems peculiar to the social scientist.

Prof. Rule and Staff

Winter Qtr.

93.120 An Analysis of American Racism

4 Q.H.

A seminar in contemporary aspects of racism in America. The cycle by which racism in our institutions helps form our attitudes, and how our attitudes in turn shape our institutions, is studied and discussed. Emphasis is on the practical, day-to-day aspects of racism, rather than the theoretical and historical.

93.125 COBOL Programming I

4 Q.H.

Fundamentals of computer programming in COBOL. Topics include: elementary computer functioning, program organization, input/output operations, arithmetic and data-handling verbs, and program logic development through the use of flow charts. Storage and manipulation of large data files on magnetic tape are introduced. No prior computer experience is required.

Prof. Finkenaur

Fall, Winter and Qtrs.

93.126 COBOL Programming II

(Prereq. 93.125) 4 Q.H.

Higher-level aspects of the COBOL language are considered. Use of decision tables in development of program logic. Improving program efficiency. Error detection and minimization techniques. Bulk data storage in magnetic tape and disc files. Storing, merging, updating, sorting, and purging of data files. Report generation.

Prof. Finkenaur

Spring Qtr.

93.151 General Biochemistry

(Prereq. two quarters organic chemistry) 4 Q.H.

Introduction to biochemical compound types, occurrence, chemistry, and introduction to metabolism

93.152 Physical Biochemistry

(Prereq. 93.151) 4 Q.H.

Bioenergetics, enzymes, and enzyme kinetics, with application to central area of metabolism biooxidation and reduction processes.

Chemistry Staff

Spring and Summer Qtrs.

93.153 Metabolic Biochemistry

(Prereq. 93.152) 4 Q.H.

Survey of intermediary metabolism, including carbohydrate, lipid, protein, and nucleic acid biochemistry.

Prof. Bialy (Biology)

93.160 American Musical Theatre

4 Q.H.

An interdisciplinary course, taught by the departments of Drama and Music. The development of the American musical, from the *Black Crook* to *Hair* and *Jesus Christ Superstar*, as an entertainment and as a serious art-form, through an examination of script, score, dance, and design. Works by Bernstein, Rodgers and Hammerstein, the Gershwins, Weill, Lerner and Loewe, and Cole Porter, are examined. Guest lecturers, recordings, films, live productions, supplement the course.

Prof. Blackman and Silverman

Fall and Winter Qtrs.

93.201 Computers in Our World

2 Q.H.

An introductory course designed for Liberal Arts majors, showing how computers function and how they are used. No prior experience is needed. Students learn how to use the large University computer.

Dr. Eiseman

Fall and Winter Qtrs.

93.202 Using Computers

2 Q.H.

An intermediary level course designed for Liberal Arts majors, exploring the use of computers to solve typical problems.

Dr. Eiseman

Winter and Spring Qtrs.

93.203 Advanced Computer Applications

2 Q.H.

An advanced level course designed for Liberal Arts majors with programming experience. Application of sophisticated techniques to solve more advanced and difficult problems.

Dr. Eiseman

Spring Qtr.

93.210 Assembly Language Programming

(Prereq. knowledge of some compiler language) 4 Q.H.

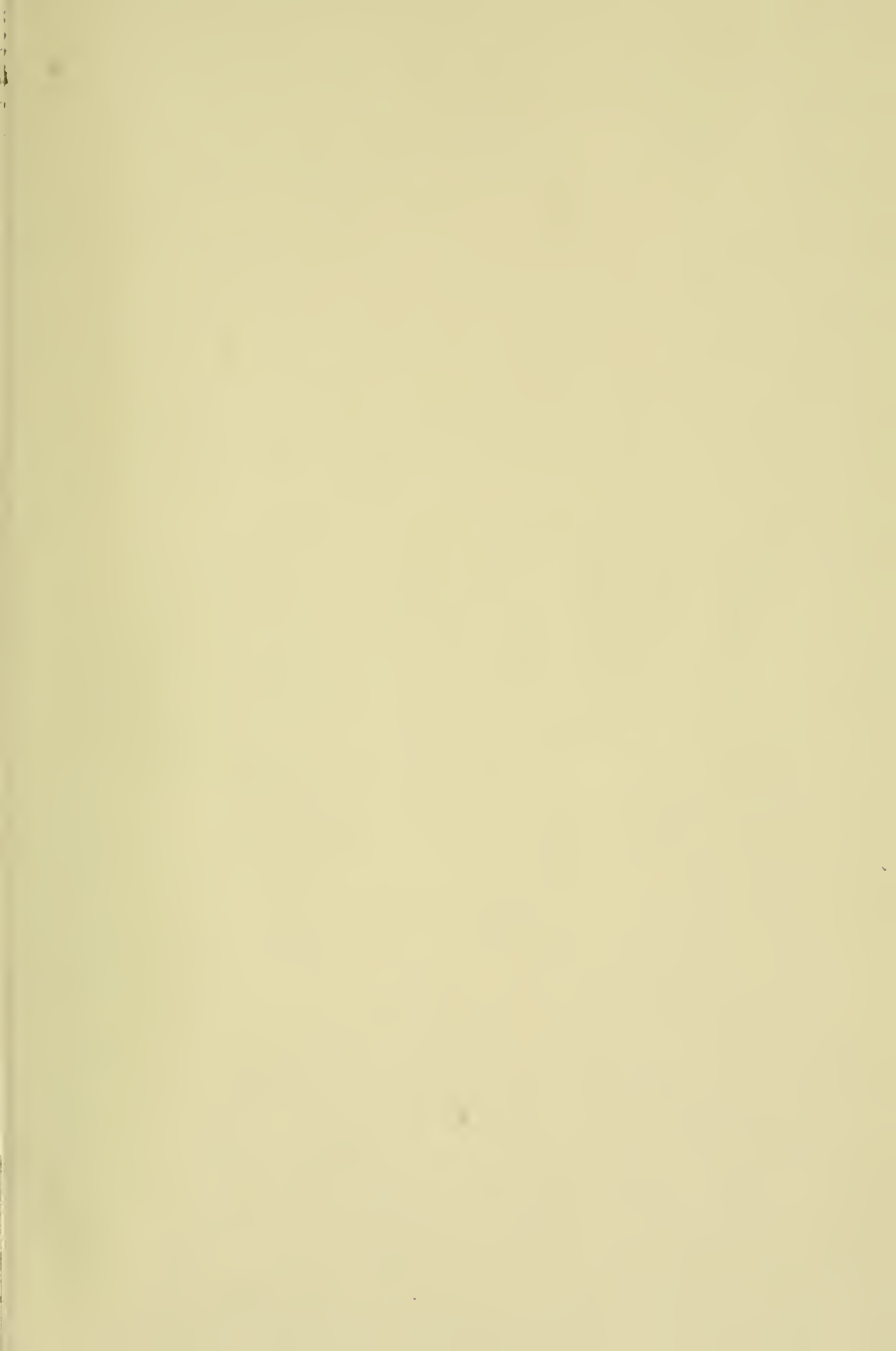
The unique programming concepts encountered in assembly language programming. Course content includes: number system theory, internal machine representation of information, complement arithmetic, basic machine language programming, assembly language instructions; concepts of addressing, subroutine linkage, character manipulation; floating vs. fixed point operations.

Prof. Rule and Staff

Spring Qtr.









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